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CAN INTRACRANIAL BIRTH INJURIES BE PREVENTED?*

HUGO EHRENFEST, M.D.
ST. LOUIS

In the face of certain facts now definitely established by careful clinical study of the new-born infant and by thorough anatomic investigations made on stillborn infants and those dying within a few days after birth, we may well ask ourselves the question, Can intracranial birth injuries be prevented?

Nystagmus can be observed in about 35 per cent of all babies born after perfectly normal labors, the incidence of this anomaly rising to almost 80 per cent in the first-born, and to 100 per cent in those with abnormal presentations.

Retinal hemorrhages are discovered within the first twenty-four hours of extra-uterine life in probably more than 12 per cent of infants.

Smaller and larger hemorrhages in the substance of the brain, outside of the fairly common pial and tentorial hemorrhages, are found at autopsy in about 65 per cent of all young infants.

Lacerations in various dural folds, with or without an accompanying hemorrhage, are revealed in about 50 per cent of such autopsies.

These are facts and figures which must convince us that anatomic and clinical evidences of some sort of traumatization of the central nervous system very often become noticeable immediately after birth.

In control studies made on the brains of certain new-born mammals with thick skull bones and no fontanels, in not one instance could any of these intracranial lesions be discovered. This furnishes convincing proof that the skull during labor acts as the all important protective factor for its contents.

The presence of sutures and fontanels in the cranium of new-born infants exposes brain and meninges to the possibility, if not likelihood, of a certain degree of traumatization during labor.

Since the aforementioned and some other anatomic and clinical proofs of a natal traumatization are encountered in a very large number of new-born and especially first-born babies, and since with relatively few exceptions they disappear promptly and permanently, it is my belief that we are justified in speaking, in analogy with a similar traumatic effect of labor on cervix or perineum, of a physiologic intracranial birth trauma.

A distinction in medical nomenclature between such a physiologic traumatization and the true pathologic birth injury would greatly help in clearing up many of the existing difficulties in the complex problem of intracranial birth lesions, most of all in the question, now so much discussed, of the etiologic relation of such lesions to certain later deficiencies in physical or mental development of the child.

Within the range of physiologic natal traumatization should be placed all those anatomic observations and immediate clinical manifestations which in general express a sort of contusion or concussion of the brain. They disappear, as a rule, as already stated, within a very short time. As a matter of fact, they are discovered only by an examination which is more thorough than that customarily bestowed on the new-born infant by the attending obstetrician. Such minimal trauma is very unlikely to have later consequences. The severer injury, if not causing immediate death, becomes the source of a group of quite different symptoms that are more obvious and, with the ever increasing interest of the profession in this problem, now but rarely overlooked. These symptoms are caused by hemorrhage, and injury to nerve tissue, and if resorption and restitution are not complete later consequences might well be expected.

It seems superfluous today to discuss the direct relation of serious intracranial injury to deep indentations or fractures of cranial bones and thus its dependence on all brusque manipulations, on excessive force in the extraction of the aftercoming head or of the presenting head by means of forceps, especially if the latter are not properly applied. It will prove more profitable, in my opinion, to dwell rather on the question of how far our newer knowledge in regard to the origin of the inconsequential and almost physiologic traumatization of the infant's central nervous system in labor can be utilized in the prevention of the more severe injuries with their definitely pathologic consequences.

Molding and altered, uneven distribution of the blood within the cranium are the two phases of labor that exert the most noteworthy mechanical effect on the brain and meninges. The overlapping of adjoining skull bones in sutures and fontanels during molding yields two important effects: 1. Through distortion and partial compression of underlying venous sinuses the intracranial blood circulation is more or less markedly influenced. 2. Compression of the elastic skull in one direction in general causes the compensatory elongation of diameters in another direction. In this manner certain of the dural folds are subjected to a definite strain which seemingly often proves too severe for their integrity. This strain is most marked along the free edges of the tentorium.

The other factor which during labor affects the skull contents has been more recently revealed and now is commonly spoken of as the suction effect. As soon as the cervix becomes dilated, and particularly after the

* More detailed information and bibliographic references will be found in the 1928 appendix to the author's monograph on Birth Injuries of the Child, New York, D. Appleton & Co.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

membranes have ruptured, the increased intracranial pressure during a uterine contraction is within the area of the dilated cervix, counteracted solely by the much lower outer atmospheric pressure. Thus through negative pressure a suction effect is exerted on the presenting part of the head, definitely expressed in the formation of the caput succedaneum but on more careful study as well evidenced in hyperemia or small hemorrhages in the bone, in the underlying meninges or even within the adjoining portions of the brain itself. Thus, the physiologic sources for common anatomic changes in the brain and meninges in the course of even a normal labor consist in intracranial stress and interference with intracranial blood circulation, the latter being the combined result of increased pressure from without and suction. Exaggeration of these factors necessarily must play an important part in the causation of the more severe injury.

Long delay in the expulsion of the head after advanced dilatation of the cervix leads to marked and long continued hyperemization of certain parts of the brain with the concomitant exaggerated anemization of other parts. Sudden and excessive overlapping of adjoining cranial bones will endanger the underlying sinus, especially if it is engorged by asphyxiation or in an aftercoming head.

Extreme change in the configuration of the fetal head inevitably places certain dural folds under undue strain and may cause them to tear. It might be emphasized in this connection that the actual harm done by such a tear is determined solely by whether the tear incidentally involves any smaller or larger vessels. This brings us to the discussion of certain contributory or predisposing factors in the origin of intracranial injuries.

While pressure and suction in the main represent the primary mechanical forces, undeniably other conditions act as significant contributory elements in the development of the serious lesions. Unlike the firm skull bones of the normal full term child, those of the premature infant offer but little protection. In the premature infant both the dura and the vessel walls are of notorious fragility. It is well known that they often are severely lacerated merely by a forced or quick passage of the soft head through a not fully dilated cervix. Engorged veins or sinuses naturally will be ruptured more easily than empty ones. A delay in blood coagulation will permit a slight oozing from a small vessel to continue until finally it amounts to a very serious if not fatal hemorrhage. From these facts, several basic principles for a prophylaxis against serious injury to the central nervous system can be evolved.

Nothing should be done to hasten or shorten a labor which seemingly is progressing normally, and particularly not in a premature labor. The obstacle offered by a rigid perineum can be overcome by an episiotomy. If, in the course of a normal labor, intervention either by medication or by instrumentation seems desirable in the interest of the child, the probability of increased risk to the child through such intervention should be properly weighed. Beyond any doubt, the majority of all obstetric operations are undertaken presumably in the interest of the child. All these operations, however, imply a definite danger to the infant. Fatal dural lacerations have been recorded even in cesarean sections from extraction of the head through too small a uterine or abdominal incision.

The most common justification for extraction with forceps is the assumption or diagnosis of beginning intra-uterine asphyxiation. As a matter of fact, with the exception of the relatively rare instances of placenta praevia, abruptio placentae, prolapsed cord, or profound toxemia, this diagnosis can hardly ever be made with any certainty. Even marked changes in the fetal heart rate or the passage of meconium are only of very limited value in this respect. Apparently most often the ominous retardation of the heart beat is the result of undue compression of the head. Forceps applied under such conditions will actually reduce the chances of the fetus if extraction causes a further or quicker compression of the head.

Tentorial tears are signs, not so much of excessive force as of the fact that this force has been exerted in a particularly unfavorable direction. Therefore, serious dural injuries might be looked for if an extraction is done at a time when the position of the head precludes entirely appropriate application of the forceps.

Irregularity and disquieting retardation of fetal heart sounds often yield promptly to the administration of chloroform or ether in small amounts, just sufficient to stop, temporarily, the uterine activity and thus to relieve the excessive compression of the head. The administration of anesthetics in this manner proves therefore doubly valuable in the prevention of serious intracranial injury; the heart action often improves promptly, while sufficient time may be gained to permit the application of the forceps later under improved conditions.

Undue haste in the extraction of the head, and especially of the aftercoming head in a breech labor, undoubtedly implies a risk to the fetus which in general is greater than the risk that hasty intervention intends to overcome.

These are only some general rules of prophylaxis evolved from basic facts. They must guide the obstetrician in dealing with the specific problems of the individual case. They must be taken into account by him if he wishes to safeguard the fetus when selecting the type of and the proper time for any obstetric intervention.

However, serious injuries responsible for immediate death or later disability are not inflicted solely during labor itself. In many instances severe harm results from improper management of the infant who is only physiologically or slightly traumatized.

It has been shown that out of every hundred newborn infants who are born dead or who die soon after birth, seemingly as the result of asphyxiation, between seventy and eighty actually succumb to intracranial lesions. Only one logical conclusion can be drawn from this fact: in the best interest of the seemingly asphyxiated baby, i. e., one who does not breathe properly, one should always consider it as probably having been intracranially traumatized. Therefore, only the very gentlest maneuvers must be employed in its resuscitation. Recommendation and possibly even the mere description of the notoriously dangerous method of swinging after the method of Schultze deserve to be eliminated from all textbooks of obstetrics. The common practice of suspending the presumably asphyxiated baby by its legs is reprehensible because this inverted position necessarily favors further escape of blood from ruptured and usually engorged vessels.

If anomalies of presentation or of labor require instrumental intervention or certain clinical symptoms make it particularly likely that the evident impairment of respiratory function has been caused by an intracranial hemorrhage, the immediate subcutaneous administration of about 20 cc. of the father's or mother's blood

will prove a valuable prophylactic measure against undue prolongation of a slight hemorrhage from a small vessel in the presence of reduced coagulability of the fetal blood.

An answer to the question asked in the title of this paper: Can intracranial birth injuries be prevented? might briefly be formulated as follows: The physiologic traumatization of the brain and meninges in labor can be reduced to its possible minimum by absolute nonintervention during labor that is progressing normally, excepting in this respect an episiotomy and truly perineal forceps applied to a maximally compressed head. If in the interest of either the mother or the child intervention is considered necessary, haste almost invariably will increase the danger to the child. Serious harm will be obviated if the seemingly asphyxiated child is always considered as probably having been intracranially traumatized.

3720 Washington Avenue.

MECHANISM OF LABOR FROM THE NEUROLOGIC POINT OF VIEW*

BRONSON CROTHERS, M.D.
BOSTON

Those of us who do not conduct labor see many children whose disabilities seem to be related to birth injury. In the nature of things, it is often hard to establish facts. One difficulty is a very real one and can be related to a varying sense of time in various groups of physicians. To the obstetrician nine calendar months is a long time to wait for a few hours of labor, which is terminated successfully when the baby breathes. Those of us who deal with children regard this period as the beginning of a series of increasingly complicated problems stretching over years. Many of our ideas are the fruit of more or less academic reflection rather than of direct experience.

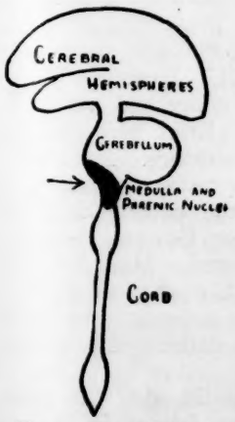

Fig. 1.—The "vital" area which controls respiration. The arrow points to the area within which injury is fatal.

A difference in point of view between obstetrician and pediatrician is perhaps inevitable. As a pediatrician, I believe that it is the duty of the obstetrician to consider whether it is not worth while to add to the ordinary conception of the mechanism of labor a description of the effect of the imposed forces on the central nervous system of the fetus and the membranes surrounding it. I believe that it is quite feasible to formulate a description of the effects of force on the central nervous system. Much of the evidence is indirect, and some of the steps in the argument are based on surmise rather than on observation; but the hypothesis seems to me worth setting up for inspection and attack.

First, it is quite clear and easily demonstrable that the various parts of the central nervous system are very different in character, in function and in development at the end of pregnancy. It is equally clear that the cavity in which the brain and cord lie is subdivided so that excessive pressure, hemorrhage, and similar factors may injure one or more or all portions of the enclosed nervous system.

The anatomic and physiologic differences between various parts of the central nervous system are obvious

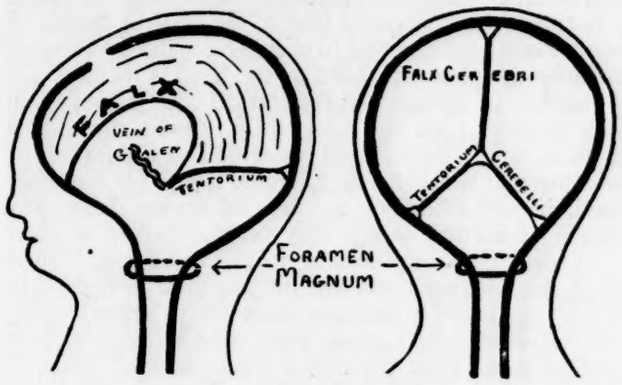

Fig. 2.—The dural septums.

enough. The vital respiratory and vasomotor apparatus lies in the medulla and the upper cord. These portions of the nervous system are fully developed at birth, and are the only parts that are needed at once.

The cerebral hemispheres are developmentally immature and are certainly not needed during or immediately after birth and there is, as far as I know, no good evidence that they are useful or active for some little time. The spinal cord, below the phrenic nuclei, can of course be destroyed without any immediate danger to life.

The question of whether a baby is living or dead at birth depends, then, on the integrity of a small block of tissue lying between the tentorium and the third or fourth thoracic vertebra and protected from direct injury by the relatively substantial muscles of the neck and by the relatively rigid base of the skull.

The arrangement of the walls and septums of the craniovertebral cavity is beautifully adapted to protect this vital area. The fetal skull is usually described as a collection of plates joined by sutures. When it is examined more critically, it is possible to draw a sharp distinction between the thin plates of the vertex and the far more massive and rigid bones of the base. To all intents and purposes the base, even at birth, is rigid, and the molding, such an important part of the mechanism of labor, occurs almost entirely above the base.

The dural septums are extremely important structures. Their relationship to the rigid base and the nonrigid vertex seems well worth emphasizing. The tentorium arises along the edges of the base and is to that extent fixed, but its fibers converge to join the falx, which acts as a ridge pole to support the roof of the subtentorial space. The falx, except at its extreme anterior part, arises from the flexible vault and sweeps back to its insertion into the tentorium. In general, it is demonstrable that distortion of the vertex does not greatly affect the rigidity of the tentorium.

The spinal part of the nervous system is enclosed in a flexible tube, which can be altered in length by compression or by extension. The dura is firmly anchored about the foramen above and to the sacrum below.

The consideration of the nervous system in its relation to its covering reveals several facts of interest. The cerebral hemispheres, which do not take any part in the initiation of independent life and are developmentally

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*Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

immature, are exposed to pressure and distortion as the head is molded and forced downward. The medulla is protected effectively from abrupt compression by the arrangement of the dural septums, which prevents sudden propagation of pressure to the subtentorial chamber. The vital region of the upper cord is protected by the very obvious fact that in normal vertex labors no extension or distortion of the spinal column is possible. Thus it is reasonable to assume that in the orderly course of normal labor the cerebral hemispheres will be subjected to fairly complete anoxemia as the head is molded. It is also fair to assume that the cortical cells, which when fully developed are the most easily injured, can at this stage of development stand a degree and a duration of pressure that would not be tolerated later. On the other hand, in dry labors or in cases of undue delay, any degree of cortical injury may occur. Schwartz gives the name of suction bleeding to this condition.' Obviously the anoxemia and the intracerebral hemorrhages that he has found in so many cases justify grave anxiety and vigorous intervention when undue delay occurs. Clinical cases after prolonged labor show all sorts of effects, but a clean-cut connection between labor and disability must be lacking since cortical function is so difficult to judge in the new-born.

I believe that as long as the tentorium and falx are intact the medulla is unlikely to be exposed to injury. It is now generally recognized that abrupt or very severe pressure is likely to rupture this essential barrier to immediate and complete propagation of pressure. If rupture occurs, a sudden release of force drives the medulla into the foramen magna. Impaction may kill the fetus at once or render it unable to initiate respiration. In addition, of course, vascular injury is likely. Since most of the venous channels are surrounded by the folds that form the dural septums, profuse hemorrhage may occur. The vein of Galen is peculiarly exposed to danger. The clinical effect of interruption of the circulation from the interior of the cerebral hemispheres may well be impairment of the function of the basal ganglions. The following is a case in point:

J. O., now an intelligent boy of 6 years, was a first baby, delivered by a difficult forceps operation. Scars, which he still bears, confirm the mother's story that the blades of the forceps were applied to the forehead and occiput. He now has a facial palsy on the right and extreme double athetoses. The logical interpretation of the neurologic signs suggests a lesion in the pons and basal ganglions; the method of delivery suggests undue cranial stress with a breakdown of the tentorium with basal hemorrhage, presumably involving the vein of Galen.

Subtentorial hemorrhage of any severity will probably kill the child by medullary involvement. As far as the brain is concerned, therefore, the danger of long delay is primarily to the cortex. The danger of forceful measures is largely to the dural septums, with a breakdown precipitating hemorrhage, on the one hand, and medullary impaction on the other.

When the injuries of the brachial plexus and the spinal cord are considered, a relatively simple situation exists. In unassisted labor, traction on one part of the baby against a part still engaged in the birth canal is impossible. Stress on plexus or cord is impossible. On the other hand, as soon as traction is exerted, a new and completely unphysiologic force is brought into play. If it is proper to make one criticism of obstetric teaching, I should like to protest against the lack of emphasis on the essentially unphysiologic nature of traction and against the failure to call attention to the easily demonstrable fact that the least elastic, most fragile and most important structures exposed to this new force are the spinal cord, the nerves issuing from it, and the membranes surrounding it. In addition to direct injury to the cord itself, or to the brachial plexus, the combination of traction and suprapubic pressure favors rupture of the tentorium.

Typical brachial palsies occur in large numbers. Sixty new cases a year turn up with amazing regularity in one clinic at the Children's Hospital. No one has successfully denied that these cases represent the breakdown of tissue before traction. To the theorist it seems unlikely that all of them are necessary, since they usually occur after the head is delivered.

The cord itself can be injured by evulsion of the plexus, by divulsion in the relatively unsupported thoracic region, or by stretching. The death rate in such injuries must be tremendous; yet enough survive to supply five or six new cases a year in our clinic.

The clinical cases of presumed birth injury which can be shown form a large group. I see more children of this sort than of any other group with organic neurologic conditions, except infantile paralysis in epidemic years.

The work of Schwartz, Beneke, Holland, Ehrenfest and many others forms a solid background. To me the whole problem seems urgent and attackable. As far as I can see, one essential need is an active and sustained interest on the part of obstetricians in the mechanical factors of delivery, and a clear understanding of the predictable stress on the nervous system.

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BEHAVIOR DIFFICULTIES IN CHILDREN ASSOCIATED WITH THE RESULTS OF BIRTH TRAUMA*

PAUL L. SCHROEDER, M.D.
CHICAGO

The great variety and number of problems in children coming to the behavior clinic gives much stimulus to the search for underlying causes. A great deal of work has been done on the effect of pathologic pregnancy and labor on the new-born child. However, these investigations have been chiefly concerned with the physical condition of the child. Brief reference to intelligence occurred early in the literature. The classic work of Little will stand forever as a monument to his memory. In like manner the contributions of Freud, Osler, McNutt, Sir William Gowers, Brissaud and many others will be remembered. More recently the work of Ford, Crothers and Collier is of especial value in clarifying divergent ideas regarding the influence of obstetric injuries and the pathologic processes involved.

Ford [1] states in his recent publication that "the great mass of infantile palsies can no longer be lightly attributed to faulty obstetrical procedure." He refers briefly to the influence of birth trauma on mental defect but passes over its relation to personality deviation. Groves Smith [2] in a recent article reported fifty cases

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

* This is one of a series of papers prepared by members of the staff of the Illinois Institute for Juvenile Research, Chicago, Herman M. Adler, M.D., director; series C, number 50.

1. Ford, F. R.: Birth Injuries of the Central Nervous System, Baltimore, Williams & Wilkins Company, part 1, p. 49.

2. Smith, G. B.: Cerebral Accidents of Childhood: Relationship to Mental Deficiency, reprinted from the proceedings of the fiftieth annual session of the American Association for the Study of the Feeble-Minded, p. 11.

of birth injuries. His paper gives a detailed report of the case histories, with especial emphasis on the intelligence level. He reports 22 per cent normal, 16 per cent morons, 40 per cent imbeciles and 22 per cent idiots. This would indicate that 62 per cent, or nearly two thirds of the total number, belong to the uneducable group of mental defectives. This is in keeping with the observations of earlier writers. Smith [3] concludes that "the existence of associated epilepsy, athetoid movements, and speech defects tends to cause personality deviations and 'scattering' in intelligence tests, which renders the intelligence as being somewhat unreliable both in evaluation of the present mental level and as a prognostic indicator of future development."

TABLE 1.—*Frequency of Labor Difficulties in Eight Hundred and Twenty-Seven Unselected Cases*

	Number	Per Cent
Difficult labor	265	32
Spontaneous labor	562	68
Total	827	100

Hamil [4] has stated that the intelligence defect may vary from the lowest grade of idiocy to the highest grade of imbecility. He adds further that the defect may be so slight as to be unsuspected as to origin. Hamil brings into consideration the question of associated behavior difficulty. He says "the child of violent temper who later grows up as an incorrigible, a recidivist or a moral pervert may owe his antisocial mentality to some small brain destruction in infancy." Definite behavior difficulties are reported by Smith,[5] with the citation of a specific case. He finds antisocial tendencies among the group with least mental retardation, behavior being characterized by irritability and lack of concentration. In a case diagnosed as encephalitis of intra-uterine origin, he observed marked distractibility. Reactions of this type are a common observation among children presenting postencephalitic behavior problems and are attributed to the organic brain involvement. Ford's [1] statement that "some few infants survive moderately large intracranial hemorrhages and afterwards show no clinical signs of cerebral injury" suggests that investigation in other fields of inquiry may show evidence of trauma.

COMPARATIVE STUDY OF CHILDREN WITH CEREBRAL PALSY AND BIRTH INJURY

Such an investigation was made of behavior problem children referred to the Institute for Juvenile Research and classified as having infantile cerebral palsy. In addition, seventy-nine children showing signs of cerebral injury at birth were investigated. This investigation included the taking of a complete history and physical, psychologic and psychiatric examinations.

Of the total of 5,000 children examined, 146 were classified as having infantile cerebral palsy. These were referred for behavior difficulties of various kinds. Investigation of this group is made for the purpose of presenting observations as they are sought for in the behavior clinic study. No attempt is here made to present a detailed neurologic or orthopedic study of children suffering from these conditions.

This group of 146 is represented by ninety-five boys and fifty-one girls, varying in age from 1 to 19 years. The average is in the 9 year level among the boys and in the 7 year level among the girls. Investigation of the developmental history in this group shows that in 48.3 per cent there was freedom from pregnancy and labor difficulties; twenty-two, or 15.2 per cent, were delivered instrumentally, and thirty-three, or 22.8 per cent, were born after long and difficult labor. Seven were diagnosed as premature, giving a percentage figure of 4.8. Only those children of seven months' gestation or less were included in this group.

Information concerning the physical condition of a child at the time of birth suggestive of signs of cerebral injury was investigated. Of the group of 146, 22.8 per cent were found who showed one or more of the following signs: inability to nurse, cyanosis, asphyxia, deformed head (other than caput succedaneum), convulsions and paralysis before the second month.

The condition of the mother during the period of pregnancy was noted. In twenty-two instances the mother was reported ill, suffering from acute or chronic illness or a debilitating condition; in seven she suffered injury during the period of pregnancy. In twenty-one no developmental history could be obtained.

In an effort to obtain information regarding the group with histories of signs of cerebral injury at birth, 1,140 clinic patients were investigated. Out of this group 562 were reported as having been spontaneously delivered; in 265 there was a history of labor difficulties which included instrumental delivery; 313 did not give any developmental information regarding the character of labor. Table 1 shows that in 32 per cent of the children seen at the institute there was a history of labor difficulties.

From this group of 265 cases, seventy-nine children were studied with the infantile cerebral palsy group. Only those children of this group were accepted who had shown signs of cerebral injury at the time of birth. The character of labor was not used as a determining factor in this selection.

Table 2 shows the frequency of premature birth in both of these groups. Under the heading of birth palsied, the number of premature births is seven. For convenience, the group showing signs of cerebral injury at birth is listed as birth injured. Six of the seventy-

TABLE 2.—*Frequency of Premature Birth: Birth Palsied and Birth Injured*

	Birth Palsied		Birth Injured	
	Number	Per Cent	Number	Per Cent
Premature	7	4.8	6	7.6
Full term	139	95.2	73	92.4
Total	146	100.0	79	100.0

nine children were shown to be premature. The percentage of premature births is therefore twice as great as in the birth palsied or infantile cerebral palsy group.

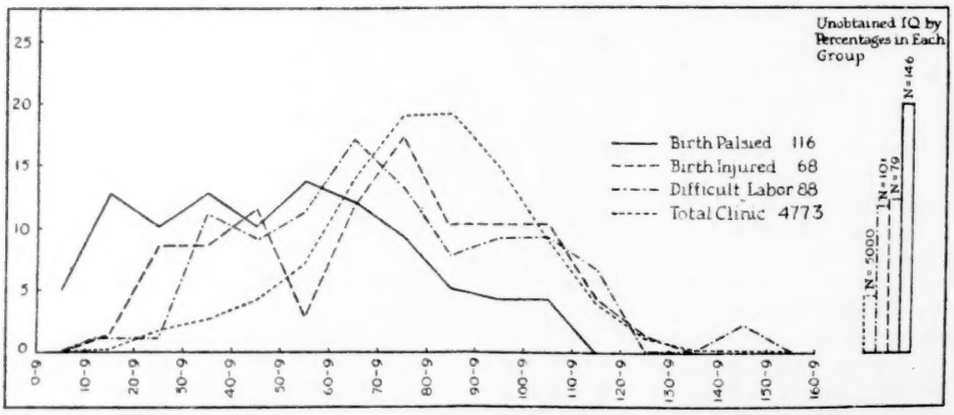
Requests for examination in the behavior clinic are generally made because of retardation, delinquency and "nervousness." A comparison of the frequency of delinquency in the two groups shows that in the birth palsied group fifty, or 34 per cent, are without complaint of behavior difficulties other than retardation, whereas this is true for only 5 per cent of the birth injured. There is a regular decrease in the frequency of delinquency when it occurs one or more times for each child. This is not true for the birth injured group, since children referred with three or more delinquencies are seen more frequently than those referred for a single delinquency. The significant finding that there

3. Smith, G. B.: Cerebral Accidents of Childhood, p. 21.
4. Hamil, Ralph, in Abt's Pediatrics 7: 25.
5. Smith, G. B.: Cerebral Accidents of Childhood, pp. 8, 18.

are many more children with birth palsies referred without behavior difficulties points to the greater ease of supervision and a lessened capacity for conduct disorder.

The type of delinquency is shown in table 3. There is a fairly even distribution between the boys and girls in the birth palsied group, whereas in the birth injured group contrariness, temper tantrums, lying, stealing and truancy occur with much greater frequency. Sex activities are reported under the heading of masturbation and heterosexual indulgence. Masturbation occurs more frequently in the birth injured group as compared with the birth palsied group but occurs with considerably greater frequency for boys in the birth injured group. Sex indulgence is relatively infrequent, only four instances being reported in each group. However, even in this small group, it is significant that in girls this occurs with three times the frequency for boys in both groups. It is significant that although the birth palsied group includes a total of 146 as compared to seventy-nine birth injured, delinquencies are only half as frequent.

The study of mental level is made by means of individual examination, the Stanford-Binet test being used. Table 4 shows the distribution according to mental age.



Relationship of percentage distributions of intelligence quotients in birth trauma groups and total clinic group.

A much larger proportion of the birth palsied group are under the level of less than 1 year, than the birth injured. The fact that in twenty-five cases mental age could not be obtained for the palsied group tends further to swell this proportion. This inability to obtain mental age is chiefly caused by the inaccessibility of the child with an obvious idiot intelligence. Furthermore, a larger proportion is found in the 1 to 6 years in the palsied group and a smaller proportion in the mental age between 7 and 12 years. In the birth injured group there is fairly equal distribution of cases in these two mental age levels. The presence of a small number in the 13 to 16 year mental age level in each group shows that children studied are not confined to the lower mental age group.

A further comparative study of the intellectual development is shown in the accompanying chart. The curve of distribution of the intelligence quotients shows the percentages for each of the four groups. It will be noted that the birth palsied group are strikingly frequent in the lower portions; the birth injured have their greatest frequency at a slightly higher level. In a group of 101 cases with a history of long, difficult labor, the intelligence quotients were also obtained. The curve showing this distribution falls almost directly on that for the birth injured group. These three curves may be compared with that obtained for the total clinic of 5,000 cases. It is significant that all fall below the average for the clinic curve. This would tend to indicate that the factor of intelligence in the birth injured and difficult labor groups is influenced in the direction of the palsied group or away from the total clinic curve. It is implied that this tendency may be accounted for by the effect of difficult labor in one group and birth injury in the other. Other technical differences need to be ruled out before such a conclusion can be accepted.

TABLE 3.—*Birth Palsied and Birth Injured Compared According to Type of Delinquency*

Delinquency	Birth Palsied		Birth Injured	
	Boys	Girls	Boys	Girls
Contrariness	6	3	12	2
Temper tantrums	6	5	11	6
Quarrelsomeness	7	3	8	5
Destructiveness	4	8	5	2
Violence	7	2	2	2
Lying	5	1	7	1
Stealing	5	1	11	2
Truancy	10	4	17	0

The educational achievements of the birth palsied group are shown in table 5. It is strikingly significant that more than 60 per cent are not in school. This is common for boys and girls. Here, again, the higher school levels, though infrequent, are in keeping with the range of mental age levels.

Syphilis is found to occur in five of the 146 birth palsied and in one of the seventy-nine birth injured. Rickets occurs eleven times in each group, amounting to 7.6 for the palsied group and 13.9 per cent for the birth injured group. Of the palsied group, 22.6 per cent, and of the birth injured group, 29 per cent, are underdeveloped. Hearing defect is relatively infrequent in both groups, occurring in 2.8 per cent of the palsied group as compared with 5.1 per cent of the birth injured. Muteness occurs with more than twice the frequency in the palsied group, with a percentage of 38.6 as compared with 15.2 in the birth injured. Speech defects, exclusive of muteness, occur with the same frequency in the two groups.

TABLE 4.—*Distribution According to Mental Age*

Mental Age	Birth Palsied		Birth Injured	
	Boys	Girls	Boys	Girls
Under 1 year	11	7	5	1
From 1 to 6 years	41	27	21	10
From 7 to 12 years	21	10	23	9
From 13 to 16 years	4	0	6	0
Not obtained	18	7	2	2
Total	95	51	57	22

Enuresis is found with practically the same frequency in the two groups, showing a percentage of 23.5 for the palsied group and of 20.3 for the birth injured. On the other hand, fecal incontinence is found to occur with a considerably higher frequency, 17.2 per cent,

in the palsied as against 12.7 per cent in the birth injured group.

Investigation of the occurrence of epilepsy and convulsions shows that the diagnosis of idiopathic epilepsy is made in 11.7 per cent of the palsied group and 7.6 per cent of the birth injured. A history of convulsions is given in 15.8 per cent of the palsied group, as compared with 8.8 per cent of the birth injured. Although the frequency of convulsions in infancy is distinctly higher in both groups than the diagnosis of epilepsy, the relative frequency remains the same. Twenty per cent of the birth palsied group are reported as having convulsions in infancy, as compared with 15.2 per cent of the birth injured.

The study of the personality is based on the reactions of the individual. The more common traits are listed under the headings shown in table 6. It will be observed that for the birth palsied group, distractibility occurs with greatest frequency and is fairly evenly divided between boys and girls. Emotional instability and sleep restlessness follow. It is in this group that the failure to obtain satisfactory responses to intelligence tests occurs. Sensitiveness, apprehensiveness and a feeling of inferiority occur less frequently. In the birth injury group distractibility does not stand out as

TABLE 5.—*Educational Achievements of Birth Palsied*

Educational Attainment	Boys	Girls
None	57	37
Ungraded	7	1
Kindergarten	0	0
Grade one	9	2
Grade two	3	1
Grade three	4	2
Grade four	2	0
Grade five	6	4
Grade six	1	2
Grade seven	2	0
Grade eight	2	1
High school, first year	1	0
High school, third year	1	1
Total	95	51

plainly as it does in the birth palsied group. However, it occurs more frequently in that group than in any other single personality trait.

In order to determine the number of personality problems for each individual, table 7 was prepared. This table shows that in the birth palsy group twenty-two boys and seventeen girls did not have any personality difficulties, whereas this was true for only three boys in the birth injured group. The table shows that in the birth palsied group the larger majority have from one to three personality difficulties. This is not true for the birth injured group. This suggests that the birth palsied group have fewer conflicts and is in keeping with the physical limitations that are common to this group.

The influence of heredity could not be determined directly. Information regarding these cases tending to throw light on this question is obtained from the statement of the economic status of the family. This information is listed under the headings of nondependent, meaning that the family is self-supporting; dependent, which means that the family is being cared for by charitable agencies, and a small group of semidependent which receives assistance infrequently.

Table 8 shows these various groups compared in the birth palsied, birth injured, and the total clinic groups. The total clinic of 5,000 (less 675 which were not recorded) shows 65.9 per cent nondependent, whereas 20.8 per cent are dependent. When the palsied group of nondependent is compared with this figure, a striking difference is observed. In the palsied group there are 86.9 per cent nondependent, which is an increase of more than twenty above that of the total clinic. This difference is even more marked in the birth injured group, there being 94.4 per cent nondependent. The usual conclusion that children of low grade intelligence come from families of poor stock tends to be dispelled

TABLE 6.—*Birth Palsied and Birth Injured Compared According to Personality Difficulties*

Personality Trait	Birth Palsied			Birth Injured		
	Boys	Girls	Total	Boys	Girls	Total
Sensitiveness	3	2	5	4	3	7
Apprehensiveness	4	1	5	7	1	8
Emotionally unstable	12	10	22	20	6	26
Distractibility	28	16	44	23	4	27
Sleep restlessness	16	6	22	21	3	24
Feeling of inferiority	1	1	2	4	2	6

by these observations. Attention must, however, be called to the influences of a larger number of cases for comparisons with the total clinic. It must further be considered that a considerable portion of the group of birth palsied are referred regardless of behavior difficulties for commitments to institutions for the feebleminded. Except for this group, the same influences tend to prevail.

REPORT OF CASES

CASE 1.—M. R. D., a girl, aged 16, referred because of defective speech and school retardation, was first in order of birth with a history of difficult labor terminated at seven months' gestation. Marked weakness was present at the time of birth, together with inability to nurse. School progress was up to grade until the age of 13, but she was said to have been advanced although her work was not entirely satisfactory. At the time of examination the patient was in the seventh grade. Physical examination showed bilateral infantile cerebral palsy with characteristic grimaces, athetoses, spasticity and speech defect. The blood Wassermann reaction was negative. The patient's mental age was 10 years and 8 months with an intelligence quotient of 0.66. Her personality traits were those of a shy, retiring, apprehensive child. The girl presented an attractive appearance when in repose. She had an air of assurance, was neat and was dressed with care in a typical adolescent manner. However, this picture was dispelled by

TABLE 7.—*Frequency of Personality Problems in Birth Palsied and Birth Injured According to Sexes*

Frequency	Birth Palsied		Birth Injured	
	Boys	Girls	Boys	Girls
None	22	17	3	0
One	15	8	4	2
Two	14	10	3	1
Three	10	3	5	5
Four	9	3	7	0
Five	7	3	7	1
Six	6	1	3	2
Seven	3	1	3	1
Eight	1	1	4	1
Nine	2	1	6	2
Ten	2	1	5	1
Eleven to fourteen	2	1	2	5
Fourteen to twenty-three	2	1	6	0
Total	95	51	58	21

her gait and by her attempts to express herself. The outstanding observations in this case were the intelligence defect and the reactions to a feeling of inferiority based on the physical handicap. These reactions were of a compensatory character and served to carry the patient far beyond the hopes that any one might have had for her. This was shown in her school achievement, which was beyond that of her mental level; it was shown in her personality, her appearance and manner and her courageous attitude. She was distinctly not a behavior problem in the sense that she was a care to others.

The hope for further satisfactory adjustment in the community will, of course, be limited by the patient's capacity for acquiring rapidly the ability to earn her own living and to adjust herself to the social group.

CASE 2.—A boy, aged 10, referred because of retardation, incorrigibility and sex activity, had been delivered instrumentally with much evidence of bruising of the head. The patient walked and talked at 2 years. He had influenza at 3 years. The family history was negative for mental disease and mental defect. There were no siblings. The intelligence quotient was 0.82. At the time of examination there was a left cerebral hemiplegia. The blood Wassermann reaction was negative. In this case there was little doubt of the injury of instrumental birth and this was borne out by the developmental difficulties and school retardation. The significant personality observations were distractibility and hyperactivity.

CASE 3.—A girl, aged 3, referred for retardation, was first in order of birth. Delivery had been instrumental, and the child had been unable to nurse. She walked at 1 year but never talked, and she had convulsions at 1 year. The family history was negative for mental disease and mental defect. Physical examination was negative for neurologic observations. The blood Wassermann reaction was negative. The child had a mental age of 4 months. The personality traits were distractibility and hyperactivity.

CASE 4.—A girl, aged 13, was referred for incorrigibility, sex activity and retardation. There was labor difficulty and the child was unable to nurse. She walked at 1 year. The age at which she began to talk was unknown. The family history was negative for mental disease and mental defect. The mental level places this girl in the borderline group with an intelligence quotient of 0.67. The physical observations were negative for neurologic defect; the blood Wassermann reaction was 4 plus. The personality traits were those of a distractible, hyperactive child. In this case there was a history of birth injury with characteristic behavior reaction but with an absence of neurologic observations. The syphilis was acquired and so does not enter as a factor.

CASE 5.—A girl, aged 7, referred because of incorrigibility, hyperactivity and restlessness, was first in order of birth with a history of labor difficulty and an inability to nurse. She walked at the age of 2 years and talked at 1 year. The family history was negative for mental disease and mental defect. The physical examination showed increased deep reflexes. The blood Wassermann reaction was negative. The child had an intelligence quotient of 0.93. The personality reaction was that of a distractible and hyperactive child. There was a speech defect. In this case there was a history of cerebral injury at birth and, though not borne out by the developmental history, residual complications and a characteristic behavior picture were present.

TABLE 8.—*Economic Status of Family*

Status	Birth Palsied	Per Cent	Birth Injured	Per Cent	Total Clinic	Per Cent
Nondependent	113	86.9	68	94.4	2,849	65.9
Dependent	17	13.1	1	1.4	1,331	30.8
Semidependent	0	....	3	4.2	145	3.3
Total	130	100.0	72	100.0	4,325	100.0

CASE 6.—A boy, aged 9, referred for incorrigibility, truancy and stealing, was first in order of birth with a history of spontaneous labor but marked weakness at birth. Convulsions and strabismus occurred at 1 week. The boy walked at 1½ years and talked at 1 year; he was in the second grade of school. There was no history of mental disease or mental defect in the family. Physical examination did not show any neurologic symptoms. The blood Wassermann reaction was negative. His intelligence quotient was 0.86. The personality traits were those of a distractible and hyperactive child. This case again showed a picture frequently encountered in the behavior clinic. There was a history of difficult labor, signs of injury at birth, negative neurologic observations, and, in spite of average intelligence, poor progress in school. The behavior was colored by restlessness, hyperactivity and distractibility.

CONCLUSION

1. Difficult labor tends to determine behavior problems which, however, are chiefly the result of mental retardation.
2. Distractibility and hyperactivity are characteristic personality traits in the birth traumas but no behavior difficulty is specific.
3. Children with cerebral birth injuries who do not develop palsies show the behavior characteristics and mental retardation common to those with cerebral birth palsies.
4. Differences in behavior that occur in this group are largely explained by the absence of orthopedic handicap.
5. Children with cerebral injury at birth who show distractibility and hyperactivity, although free from birth palsies, should therefore be included in the classification of the results of birth trauma.

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[EDITORIAL NOTE.—This paper, together with the papers of Dr. Ehrenfest and Dr. Crothers, which precede it, and the papers of Drs. Piper and Bachman and Dr. Porter, to appear next week, constitutes a symposium on obstetrics. The discussion will follow the papers to be published in our next issue.]

COLLOIDAL LEAD COMBINED WITH X-RAYS AND RADIUM IN TREATMENT OF CANCER

FURTHER STUDIES *

ALBERT SOILAND, M.D.
WILLIAM E. COSTOLOW, M.D.
AND
ORVILLE N. MELAND, M.D.
LOS ANGELES

[EDITORIAL NOTE.—This paper, together with the paper of Dr. Knox, concludes the symposium on cancer. In our last issue we published the papers of Drs. Waters, Colston and Gay, and Dr. Ullmann.]

On two previous occasions it has been our privilege to present our observations on the use of lead in the treatment of malignant growths. Those presentations were largely in the form of preliminary reports in which we described the immediate effects of colloidal lead and colloidal lead phosphate on the patient. The present paper merely records a continuation of the work that was begun two years ago.

PRESENT PROCEDURE

Our technic has varied a great deal because the work has been more or less experimental in its scope. At present it is our practice to inject from 100 to 120 mg. of the colloidal lead phosphate intravenously at weekly intervals until three injections have been given, provided the patient's condition permits. On or about the fifth day after the administration of the first dose, irradiation is commenced. In all cases, except two in which we used radium packs, we have relied on the x-rays. All patients with three exceptions have been admitted to the hospital. These three were unable to be hospitalized because of limited finances, so they were treated at our office. They were given smaller doses, the maximum being 60 mg. After patients have received from 300 to 350 mg., they are not given any more lead for a period of from four to six weeks. During this time they have an opportunity to build up again and the

* Read before the Section on Radiology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

blood returns to its normal level. It is questionable whether or not this procedure is the ideal one, but in our experience it has lessened the toxic effects of the technic previously used.

EFFECTS ON THE PATIENT

The immediate effects and reactions following the injections have been described in earlier writings by a number of authors. At present, with the use of colloidal lead phosphate, we have not seen any general reactions except for an occasional chill, which Ullmann [1] assures us is due to the gelatin. The late effects, which come on a few weeks after the lead has been administered, are a sensation of weakness accompanied by anemia and progressive deterioration. The patients complain of some upper abdominal distress, nausea and a desire to belch, which leads them to think that their troubles are due to gas. These symptoms are largely a result of blood changes, and some toxicity resulting from liver destruction. The blood picture shows almost constant changes; there is a slight increase in the red count and usually a decrease in the white count. With the rise in the red cells there is a corresponding increase in hemoglobin. These observations persist until saturation takes place, after which there is a progressive drop in the hemoglobin readings and in the red and white blood cell counts. As the weakness, nausea and vomiting progress, the white count goes up, accompanied by a proportional increase in the polymorphonuclear cells.

The local changes in the malignant tissues are slow as a rule. Usually there is a sense of fulness around the tumor, which is due to edema. Following this phase, which may last only a few days, there is a gradual shrinking, and fibrotic changes occur if there is no evidence of cachexia. Patients who become cachectic show little change in the growths, and there may even be an increase in the size of the tumor.

A great number of malignant growths on the skin, and those involving the cervix and fundus uteri, are infected. These are the types that frequently react unfavorably to surgery, because of postoperative sepsis, and to radiologic treatment because of apparent activation of the sepsis already present, since infected growths are practically always radioresistant. Following the administration of lead in these patients there has been a chill, a sharp rise of temperature, and an increase in the leukocytes. This is followed by an augmentation of the purulent discharge. Evidently the lead has had a devitalizing effect on the tissues in the growth, for the pus and sloughing increase and the general condition of the patient becomes decidedly worse. Ullmann [1] noticed in his patients who had metastatic involvement of the lungs and who came to autopsy that a complete liquefaction of the nodules took place and that death was apparently due to multiple areas of acute pneumonitis. Whether these patients are victims of a double intoxication from lead and infection, or from increased infection alone in tissues devitalized by the treatment, is a question that we have not entirely settled in our own minds.

EFFECTS ON THE RADIOSENSITIVENESS OF THE GROWTHS

Whether lead should be used alone or in conjunction with irradiation is a question that has not been answered yet, but it is our opinion that irradiation should always be used. In the earliest patients whom we treated, lead alone was used; that is, no simultaneous recourse to irradiation was attempted. The reason for this is obvious, since all patients in the first group studied were in the advanced stages of malignancy, and all had received radiation therapy to the point at which they no longer responded. In the later patients we have combined lead and radiation therapy. From our observations we feel that lead increases the sensitiveness to irradiation. This is illustrated by the following case:

Mrs. F., aged 54, had had a subtotal hysterectomy for carcinoma of the uterus two years before examination. She was well for one and one-half years following the operation and then she began to have irregular vaginal bleeding. Examination showed an extensive nodular infiltration of the entire vagina with extension into the left broad ligament. Under radium and roentgen treatment there was an almost complete disappearance of the disease. Recurrence took place in a few months and was progressive, despite further irradiation and the use of colloidal gold, orally and intravenously. At the time the use of lead was begun there was a frozen pelvis, almost complete occlusion of the vagina, retention of urine, and massive extension to the right labium and the right groin. Under lead therapy there was a diminution of pain but no marked change in the appearance of the growth. Small doses of x-rays were then administered and there followed an almost complete disappearance of the disease externally. At this time a severe tonsillitis came on, which was complicated by a marked cystitis and an anemia which resulted in death. In this patient the growth had become resistant to irradiation, but after the use of lead one could almost see it melt away under irradiation.

TYPES OF CASES TREATED

Our series is somewhat small, since it includes only private patients. In this group there were twelve carcinomas of the breast; one osteogenic bone sarcoma; six sarcomas; one papillary cystadenoma of the ovary, and eleven epitheliomas involving the cervix, tonsil, tongue and glands of the neck and penis.

RECOMMENDATIONS FOR TREATMENT

When the tumor is very large and accessible, and when there seems to be absorption from sloughing, we feel that malignant masses situated on the external surfaces of the body and easily reached should be removed by the endotherm or by electrocoagulation before any lead is given. This will have a twofold effect: first, it will materially reduce the amount of lead that must be used and, second, it will eliminate a great deal of absorption from the necrotic tissue which serves as a culture medium for infection and which leads to cachexia from absorption. As soon as the lesion is cleaned up reasonably well and the patient's resistance is better, lead can be administered. This is the procedure we are following now but it is too early to report on the results of the regimen as yet.

GENERAL CARE

Needless to say, lead is only one incident in the treatment of cancer. Every effort must be made to keep up the general nutrition by a well balanced diet, liberal in vitamins. Daily exposure to the sun and to an alpine lamp seems beneficial. The use of milk and of calcium has a stabilizing effect in preventing too rapid breaking down of the lead. Liver feeding and transfusions, at times, are necessary to restore the blood.

RESULTS

We have treated thirty-one patients in whom we have carefully observed the effects of treatment. Twelve of these were cited in an earlier paper; [2] all are dead. The

1. Ullmann, H. J.: Personal communication to the authors.

2. Soiland, Albert; Costolow, W. E., and Meland, O. N.: The Metallic Colloids in the Treatment of Cancer, Radiology 8: 469 (June) 1927; Advanced Cancer: Experiences in Its Treatment with Colloidal Lead, California & West. Med. 28: 198 (Feb.) 1928.

longest duration of life in any one patient was about one and one-half years.[2] Of the nineteen additional patients, eleven are dead and eight are living, four of whom are failing rapidly. Four are in good condition, but in these the disease is still present and palpable, although apparently arrested. At first sight this seems a small number, but we have attempted to study the effects in individual cases rather than in a large number of patients, and until we can satisfy ourselves that the results warrant a change we shall continue this policy.

Naturally, we are disappointed in our results. That the treatment has a temporary good effect cannot be denied, but, when viewed over a longer period of time, the results of the method are not encouraging. When the expense of the treatment is weighed against the possible ultimate good effects to the patient, it seems that lead therapy, as used by us, is not the solution to the cancer problem.

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LEAD THERAPY*

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Blair Bell[1] in 1925 called attention to the fact that certain cases of malignant disease had been arrested by the intravenous administration of colloidal lead. After study of the methods employed in Liverpool the treatment of a series of patients was begun at St. Luke's Hospital, New York, and it has been carried out during the last two years. In view of the interest in the method shown by the profession and by the public, this preliminary report is being made of our results.

Many of the patients received large doses of x-rays simultaneously with or subsequent to the administration of the lead. The reason for this was that Blair Bell had reported that the combination seemed useful and it also seemed unfair to the patients to deprive them of a remedy that had already been shown to have certain palliative or curative effects. X-rays were therefore given to all except a few patients—for example, those with diffuse carcinoma of the stomach of leather bottle type. In these it was felt that the x-rays would only aggravate the symptoms and make the patients worse.

The present paper constitutes an analysis of the effects produced by these treatments on forty patients. It covers a period of two years. These forty patients were in hopeless and advanced stages of the disease. They were suffering from carcinoma or sarcoma and had recurrent or inoperable malignant tumors at the time they were under treatment, and they are selected because they were given not less than from 150 to 663 mg. of the colloidal lead. One patient with Hodgkin's disease and one with chronic myelogenous leukemia were also treated. Twenty other patients, all with advanced and extensive carcinomas, were treated during the same period, but all of these were given less than 150 mg.; only a few were given more than one dose, and in every case the hopeless condition of the patient was promptly apparent and the progress of the disease so rapid that it was early concluded that to persist with the colloid was inadvisable. These twenty patients should therefore be excluded if any attempt is made to judge the therapeutic effects of lead. Nearly all have died of their tumors at a period which would have been expected from the normal course of the neoplasm. A few others are still living but in so cachectic a state as to render any further treatment either with lead or with x-rays inadvisable.

A consideration of the forty cases mentioned shows what may be expected from the treatment of such a class of hopeless patients with lead and x-rays. A survey of the clinical records may be thus summarized: Many of the patients were relatively young, one fourth of them being under 35 years of age and three fourths of them under 50. Twenty-three were men, and the other seventeen were women. The diagnoses made in these cases are given in the accompanying table. Many of these patients had received prolonged and heavy roentgen treatment without benefit before the lead therapy was begun.

The cases of myeloid leukemia and of Hodgkin's disease were treated as an experiment because the neoplastic character of these diseases has been often asserted by pathologists. The granulation tissue in Hodgkin's disease should be susceptible to lead, since it is generally susceptible to x-rays, and also because lead appears to affect the granulation tissue in ulcerating tumors. The patient with Hodgkin's disease was not in any way benefited. The lead did not alter the white cell count of the leukemia in the slightest degree but the patient later rapidly improved under roentgen irradiation.

All of these patients had been operated on either for the purpose of removing the growth or to obtain microscopic sections. In only two of these cases, a recurrent carcinoma of the breast and a carcinoma of the lesser curvature of the stomach, were microscopic slides not obtained, but a reliable statement as to the microscopic diagnosis made elsewhere was available.

Diagnoses in Forty Cases

Epithelioma (tonsil, cheek, cervical nodes, vulva and larynx)	5
Carcinoma of cervical region, possibly of thyroid origin	1
Carcinoma of breast	5
Carcinoma of bronchus	1
Carcinoma of stomach	4
Carcinoma of colon	4
Carcinoma of body of uterus	2
Carcinoma of ovary	2
Carcinoma of pancreas	1
Hypernephroma	1
Teratoma of the testis	3
Seminoma of the testis	1
Carcinoma of the bladder	2
Lymphosarcoma of the cervical nodes	1
Sarcoma of the pharynx	1
Myxosarcoma of the cervical region	1
Fibrosarcoma of the cervical region	1
Retroperitoneal sarcoma	1
Sarcoma of the femur	2

TREATMENT

With two exceptions, the forty patients were all hospitalized while they were under active treatment. Seventeen of them were permitted to return to their homes at various times during the course of the treatment, coming back to the hospital for a few days while they were receiving the larger doses of both lead and x-rays.

In all, five preparations of colloidal lead have been used: lead prepared according to the method originally described by Bell; two preparations of colloidal lead phosphate, one received through the kindness of Dr. H. J. Ullmann of Santa Barbara, and another prepared under the direction of Dr. G. H. A. Clowes of Eli Lilly and Company; a mixture of colloidal lead and lead selenide containing 2 per cent of lead, furnished by the

* Read before the Section on Radiology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

1. Bell, W. B.: Lancet 2: 1003 (Nov. 14) 1925.

kindness of Professor Bell, and a proprietary British colloidal lead.

In the earlier cases, treated in 1926 and the first part of 1927, only the original Blair Bell formula was used. The quantity given at a single dose has varied from 30 to 110 mg. In general, it has been our aim to follow the method laid down by Bell and his colleagues [2] and to attempt to give 600 mg. of lead within a period of from six to eight weeks. In only very few cases was it found possible to accomplish this. The anemia and the gastro-intestinal symptoms which sometimes developed rapidly made it apparent that it was advisable to give smaller doses, separated by longer intervals. Half of the patients were never given more than 350 mg., but twelve of them were given more than 550 mg. The maximum dose given was 660 mg. of the original Blair Bell colloid.

Despite this heavy dosage there were no deaths in our patients that could be attributed to lead. No serious complications have been observed. Anemia, however, has developed fairly regularly following the administration of the larger doses, especially of the Blair Bell lead. A small proportion of the patients experienced chills from two to six hours after the treatment. A slight rise in temperature was very frequent but not constant. A faint trace of albumin was regularly observed the day following the treatment, but it disappeared within two or three days. A few casts were occasionally seen for a day or so. Hematoporphyrin was almost invariably observed in the urine within a few hours after even moderate doses of the Blair Bell colloid. It was not found after the phosphate or other types of colloid. A lead line was observed in more than half the cases, often, as has been pointed out, only around teeth which are dead or where the alveolar mucous membrane has been recently infected. No involvement of the central nervous system has been noted, with the possible exception of three patients. One, after being given 632 mg. for a retroperitoneal sarcoma, developed an extensor paralysis of the right hand a few days before his death. Another patient complained of shooting pains in the muscles of the back and along the distribution of the sciatic nerve on both sides a few minutes after each of the three doses. This pain disappeared rather slowly, lasting for a week after the third dose. The third was a patient with carcinoma of the rectum and extensive metastases to the liver and nodes. She received only 275 mg. of lead and was extremely cachectic at the time it was given. Following the third dose she developed symptoms believed to be due to a lead encephalopathy by one of her physicians, but the liver was extensively involved by the neoplasm and a mild jaundice was present, so that no great importance can be attached to the development of cerebral symptoms.

Sixteen of the patients required from one to four transfusions. Transfusions were given according to the clinical condition of the patient rather than arbitrarily, the condition being judged by the percentage of hemoglobin or the degree of stippling. However, it was generally found advisable to keep the hemoglobin above 60 and therefore transfusions were given frequently in some of the patients who received heavy medication, in order to avoid symptoms of acute anemia. When more than two stippled cells were seen in an oil immersion field, the treatments were interrupted. In one of the patients the hemoglobin fell from approximately normal to 30 per cent, and this followed prolonged irradiation and 325 mg. of lead. Another patient who had received 340 mg. still had a hemoglobin of 80 per cent and felt perfectly well. These cases illustrate the marked differences that exist between individuals in their toleration of lead and the capacity of the bone marrow to regenerate.

In nine of the patients a slight icteric tint was observed following nearly every dose of lead. This generally appeared within twelve to twenty-four hours, at which time it reached a maximum, and after seventy-two hours began slowly to disappear. Two of the patients had severe jaundice, with palpable and tender livers, the bile index in these cases being 30 and 72, and in only four cases was there a sufficient degree of intestinal pain, nausea and distention to justify the conclusion that the patients were suffering more or less from lead colic. In every case, however, it was far milder than the classic colic seen in painters with chronic poisoning. In one case this followed the administration of 300 mg. of the Ullmann phosphate and 56 mg. of the Blair Bell lead. The pain developed the day following the last treatment and persisted for about a week. During this time there was persistent constipation and pain referred to the left hypochondrium, the epigastrium, or the umbilical region. The patient was somewhat benefited by intravenous treatment with calcium chloride and the condition entirely disappeared within ten days. In one other patient nausea persisted for four months. This was not accompanied by constipation, but epigastric pain was frequently present. The patient died six months after the conclusion of a course of 553 mg. of Blair Bell lead, but, as a post-mortem examination was not permitted, other reasons for the nausea could not be determined. However, no visible evidence of cancer en cuirasse was present, as in the beginning, and death was of a sudden myocardial type.

At least fourteen of the forty patients have suffered severely from nausea during the course of the treatment, especially after about 100 mg. has been given. Lead has been demonstrated in the stomach washings of these patients. Many others have complained very little of nausea and only moderately of anorexia. Those with persistent nausea have frequently been known to have peritoneal involvement. In any case, intestinal and gastric tumors are very unfavorable types to treat with lead because of the frequency of this severe nausea. No nephritis has been produced by the lead, nor has it been necessary to desist from the treatment because of the condition of the kidneys, except in a few patients with very large intra-abdominal tumors in which albumin and nitrogen retention would be expected as a terminal complication. In general, the phosphate has given a less severe reaction than the original Blair Bell lead, but whether it is as effective clinically we are unable to judge.

Of the forty patients mentioned, eight are living. Four of these still present extensive tumors and it cannot be believed that the treatment with lead has afforded them much relief or prolongation of life. The other four patients in whom the lead treatment was discontinued from six to eight months ago present the following conditions:

REPORT OF CASES

CASE 1.—A woman, aged 65, operated on in July, 1927, for a papillary carcinoma of the ovary of a definitely malignant and invasive type, was suffering from a recurrence readily palpable through the abdominal wall six months later, in December, 1927. At this time treatment was begun with col-

2. Bell, W. B., and others: Lancet 1: 537 (March 13) 1926.

loidal lead phosphate and continued for two months. During this time 440 mg. was given. The tests for renal function, and the chemical condition of the blood and urine were approximately normal, but the patient developed a fairly severe anemia with only 55 to 60 per cent of hemoglobin and an occasional stippled cell. Although roentgen treatments had been given at intervals of from two to four weeks after the operation, she was in December subjected to much larger and more frequent doses at the time the lead was begun. At present the patient is in much better condition generally; she has not required any transfusions, the hemoglobin is 75 per cent, she has not lost weight, and there is no palpable tumor. The roentgen treatments have been continued at intervals of about four weeks since February, 1928, a series of from three to four treatments being given within six to eight days, amounting to 1½ erythema doses. The patient cannot be considered cured, but the clinical results to date are very gratifying.

CASE 2.—A woman, aged 29, operated on in December, 1926, for a very extensive carcinoma of the cecum with resection and entero-anastomosis, but left with numerous peritoneal metastases, was seen again in February, 1927, at which time both ovaries, each about 12 cm. in diameter and full of metastatic tumor, were removed. Evidences of the invasion of the mesentery of the small intestine, the omentum and other peritoneal surfaces were present, and microscopic section of this tumor shows the typical signet ring formation of mucus-producing cells frequently observed in carcinoma of the gastro-intestinal tract. Treatment was begun, March 8, 1927, and continued at rather infrequent intervals until November 17. There was a distinct area of doughy feel in the right inguinal region. The patient was given 296 mg. of lead; 136 of the Blair Bell lead, 120 of the Ullmann phosphate, and 40 of the lead selenide. The hemoglobin was 79 per cent when the treatments were begun and 95 per cent when they were concluded. She has been given numerous exposures to high voltage x-rays over the entire abdomen. The patient has never developed a persistent nausea, anemia, jaundice, nephritis, or any other complications from the treatment, the roentgen sickness lasting only about a day and the effects of the lead not being much more severe than those of the x-rays. She has appeared to be in perfect health for the last year, and has gained weight. A tumor is not palpable.

CASE 3.—A man, aged 41, suffering from carcinoma of the pancreas, had an operation performed in March, 1927, at which time it was found that the spleen was very large and that there was a large tumor involving the pancreas and extensive involvement of the omentum with ascites. Portions of the tumor removed for microscopic study showed a papillary adenocarcinoma. Treatment was begun on July 23, 1927, and continued until December 9. In all, 636 mg. of colloidal lead was given, consisting of 100 mg. of the Blair Bell lead, 156 mg. of the Ullmann phosphate, 30 mg. of lead as lead selenide, and 250 mg. of the proprietary British colloid. The patient remained throughout in very good clinical condition, suffering only a few days of nausea, vomiting and some prostration after the larger doses. He nearly always experienced a severe chill and rise of temperature within two hours after the treatment. At no time has he required a transfusion nor has any other complication developed. The large mass palpable in the epigastrium and extending into the splenic area has gradually disappeared until it was scarcely to be felt at the termination of the treatment, and the patient is now (May, 1928) reported well by his physician. A series of exposures with high voltage x-rays were also given during each course of the treatment in the hospital and while the patient was receiving the lead.

CASE 4.—A man, aged 38, suffering from carcinoma of the cervical region, not connected with the thyroid gland but possibly derived from an aberrant thyroid, was operated on in March, 1927. He presented himself six weeks later, April 29, with a large recurrence above the clavicle. He was treated until October, during which time he was given 560 mg. of colloidal lead, 160 being of the Blair Bell lead and 400 mg. of the Ullmann phosphate. The patient was never hospitalized; he felt well and appeared clinically in excellent health during the entire treatment; the hemoglobin never fell below 80 per cent; he had no nausea or vomiting, and the tumor progressively disappeared until at the termination of the treatment only a slight indurated scar could be felt. As this has remained constant for six months after the conclusion of the treatment, it is probably only a scar. No tumor mass can be demonstrated.

COMMENT

It is therefore obvious that four of the patients, treated with 440, 296, 636 and 560 mg. of colloidal lead, respectively, accompanied by high voltage roentgen treatments, with palpable tumors at the time their treatments were begun, have improved in their general clinical condition, their tumors have disappeared, and they are now well, from six to eight months after the termination of the treatment. They have all tolerated the lead very well. None of them have had transfusions or have suffered severely from the effects of either the lead or the x-rays. It must be noted that these patients have behaved very differently from many of the others who have been given both larger and smaller amounts of lead and who have never shown any marked improvement.

Striking palliative effects have been noted in at least five other cases. Three recurrent carcinomas of the breast have greatly improved for a time and the beneficial effects observed appear to have been due to the lead itself rather than to the x-rays, two of the patients having previously received roentgen treatment without benefit, and the third not having received any. Immediate changes were noted in these cases in the appearance of the granulations or the color of the indurated plaques in the skin. In a third patient, with a discharging ulcer in the axilla, there was progressive healing with only 110 mg. of lead.

A fourth patient, with an epithelioma of the vulva which had ulcerated under excessive irradiation, experienced a great deal of benefit from 380 mg. of the Blair Bell lead without roentgen irradiation, the ulcers nearly healing at times. She suffered from lead colic and refused further treatment.

A fifth patient, with a large reticulum cell sarcoma of the tonsillar region and soft palate resistant to x-rays after heavy treatment, practically unable to take food and unable to speak audibly, derived great benefit from the 650 mg. dosage of the Blair Bell lead. After the first two doses vascular changes occurred in the tumor, which promptly receded until it could no longer be observed even by a throat specialist. The patient died, however, shortly after the conclusion of the treatment of a Ludwig's angina. He bore the treatments very well, was never highly toxic, and was given three transfusions, more with the hope of combating the sepsis in his throat and promoting healing than because of his severe anemia.

SUMMARY

It is therefore our experience that colloidal lead may have a decidedly beneficial effect on patients suffering from malignant tumors, and that occasionally ulcerated surfaces will heal without other treatment and with moderate doses. Further, unless some favorable effects are observed during the early part of the treatment, for example, after the patient has received about 300 mg., no marked improvement is to be expected. The anemia is a serious sequel in that it requires transfusion in many cases. The other complications, aside from nausea and colic, can probably be largely avoided by careful observation of the blood, urine and general clinical condition of the patient. Although numerous analyses were made of the blood of all these patients for various constituents, except in a few instances they

were of less value than careful clinical observation of the patients.

While the results reported may seem rather good in that 10 per cent of these forty hopeless cases are in an arrested state, the burden of treating such a group is very great. The depression and the nausea from which these patients suffer and their continuous complaints require an unusual amount of nursing and medical attendance. The necessity for transfusion adds an expensive and annoying additional form of therapy. Generally speaking, no patient should be accepted without adequate provision for hospitalization, or without, also, ample and expert provision for the administration of roentgen therapy. It may well be questioned whether the results obtained in this series may not be due as much to the efficient use of x-rays as to lead. However, the experimental work of Wood [3] and of Mottram [4] has shown that in animals at least the combination is more effective than either agent alone. Also there cannot be selected from among forty other such patients treated with the same amount of x-rays, but without lead, four such favorable results. The method is certainly one that cannot be used generally by the practitioner who has neither the time nor the facilities for the complete control, both laboratory and clinical, of his patients. While none of our own patients were selected with an idea that any one type could be benefited, it is obvious that carcinoma of the stomach cannot be treated, and in general the tumors sensitive to x-rays seem also to be sensitive to lead, the highly vascular tumors probably being more sensitive than the fibrous types. No striking benefit has been observed in any patient with pulmonary involvement. The patient with chorio-epithelioma of the testis was not sensitive to the lead.

CONCLUSIONS

1. Of a series of forty patients with various types of malignant tumors treated with colloidal lead or lead and x-rays combined, four are at present wholly free from physical signs of their original disease. The time which has elapsed since the disappearance of their tumors is too short to permit the assumption that a cure has been obtained.

2. Several other patients have been benefited temporarily. In the remaining thirty-four patients, death was due to the progress of the neoplasms or to some extraneous lesion.

3. In a series of sixty patients neither death nor serious complications resulted from the use of lead.

4. In twenty additional cases the patients were so cachectic or their neoplasms were so large that it was found necessary to stop the use of lead before the amount had been given which might have been expected to cause any improvement.

5. No selection of patients was made, except to exclude the moribund and those who had advanced renal lesions.

6. The combination of lead and x-rays is often more effective against the neoplasm than either used alone.

7. It may be concluded that the results of this series confirm in a general way the facts demonstrated by Bell that, in a few persons with inoperable and advanced neoplasms, arrest of the disease may be obtained by the combined administration of lead and x-rays.

St. Luke's Hospital.

3. Wood, F. C.: Use of Colloidal Lead in Treatment of Cancer, J. A. M. A. 87: 717 (Sept. 4) 1926.
4. Mottram, J. C.: Brit. M. J. 1: 132 (Jan. 28) 1928.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. WATERS, COLSTON AND GAY, DR. ULLMANN, DRS. SOILAND, COSTOLOW AND MELAND, AND DR. KNOX

DR. G. E. PFAHLER, Philadelphia: I share the authors' skepticism as to the value of this form of therapy, but I feel, as they do, that further investigation should be made. It would seem that of the preparations that have been used, the dry phosphate is of most value. I have treated only six cases with a lead preparation, and this preparation was of German make. There were relatively few toxic effects, but in only one case did I see any results that for the moment made me enthusiastic. In a case of carcinoma of the esophagus we combined high voltage roentgen therapy with the injection of lead, and obtained improvement and finally restoration to almost normal. In three months, however, an enlargement of the liver developed, and three months later the patient died. That is the only case in which I have seen lead accomplish anything. We have treated twenty-four cases with bismuth injections, and in four of these we have seen results which gave us the impression that, perhaps, we had accomplished some good with these injections. There were practically no disturbing symptoms from the bismuth injections. We must be extremely cautious in interpreting results when roentgen therapy is combined with lead injections, because occasionally there are striking results from irradiation alone. The only case presented by Dr. Knox that would make me feel very encouraged about the use of lead is the case in which irradiation was not used.

DR. DAVID I. MACHT, Baltimore: With the progress of modern medicine, it is necessary for the various departments of medicine to be in closest cooperation with each other. Likewise, medical men should cooperate with specialists in other sciences, such as chemistry and physics, and, furthermore, even cooperate with those who are engaged in the more general aspects of biology. This is well illustrated by this symposium on lead therapy. I came here to the Section on Radiology as a pharmacologist, and I think it is not far fetched at all for any one to recognize the fact that the future of lead therapy in cancer is most closely associated with pharmacology and toxicology. Any pharmacologist will recognize at once that there has been very insufficient study of lead from the pharmacologist's and toxicologist's point of view. I recall a few studies by Professor Hirschfelder and Dr. Dilling, associated with Dr. Blair Bell in Liverpool, but a great deal more study must be made. I have had the privilege of examining the specimens which Mr. Harden prepared for Drs. Waters, Colston and Gay, and I tested them from the toxicologic point of view. The phosphate was certainly more toxic than the colloidal lead. What is needed in lead therapy is a new compound that will be less toxic and yet more effective. Such compounds would be in the domain of the expert synthetic chemist, and for this reason, again, this whole subject is indissolubly connected with the cooperation of specialists in fields outside of special medicine, such as chemistry and physics. The work of Drs. Waters, Colston and Gay could hardly have been carried out satisfactorily had it not been for the whole-hearted support and cooperation of Mr. Harden. My work on ultraviolet rays could not possibly have been made in any university had it not been for the cooperation of an expert physicist, Dr. Anderson. I want to call attention finally to another aspect of this whole subject. In medicine it is necessary to cooperate even with the general biologist. Those who have interested themselves in lead therapy and in cancer know, perhaps, that the beginnings of this subject, the experiments of Dr. Bell, are somewhat connected with the very new science to which I have given the name phytopharmacology. If one studies the work of Dr. Dilling, professor of pharmacology in Liverpool, one will find that the earliest experiments on the effect of lead on cells were begun with the study of the effects of various metallic compounds, salts and ions on the growth of seedlings and the germination of seeds.

DR. ALSON R. KILGORE, San Francisco: Through the courtesy of Dr. Ullmann, we have been able to treat sixteen patients with lead phosphate at the San Francisco Hospital. We have completed the treatment of fourteen so far. Of those fourteen patients all but three have died. Autopsies have been

performed on all but one and we have been unable to demonstrate, pathologically, any appreciable effect on the tumors. Dr. Pfahler has pointed out very clearly in his discussion one of the greatest difficulties in evaluating this treatment; namely, the difficulty of separating the effect of irradiation from that of lead therapy. We have had one interesting case of breast cancer with very generalized metastasis, in which definite improvement resulted from a course of roentgen therapy, with recurrence after six months. The patient was given altogether 400 mg. of colloidal lead phosphate. She became so sick that for the time being we did not give the roentgen therapy that had been planned. During the course of the next month, her general condition began to improve and we waited to see how far improvement would go without further therapy. With only the lead phosphate, therefore, the patient improved so much that some of the nodules practically disappeared completely; she gained weight, and was able to be out of bed. We obtained one of the nodules which had nearly disappeared for microscopic examination, and were disappointed to find that, although the center of the nodule was represented by fibrosis, in the periphery there were still live cancer cells, not different in appearance from those presented by the original specimen. This case demonstrated conclusively to us that lead alone can certainly do something for cancer of this type, and that the treatment is worth further trial. This case suggested as a possibility, at least, that lead in one of its forms may be more efficient in tumors that have previously been irradiated.

DR. LEILA CHARLTON KNOX, New York: Dr. Wood and I are both aware of the unscientific method which it has been necessary to pursue in order to comply with the humanitarian requirements of practice. The effects of lead and of roentgen therapy cannot be differentiated sharply in our results as the two agents have been combined in most cases. There are, however, three reasons why we believe that the lead may in some patients have a beneficial result: a few of our patients were benefited without roentgen treatment; a few were distinctly improved after roentgen treatment had proved ineffective, and we do not believe that another similar series of forty patients treated with roentgen rays alone will show four such advanced cases in which there was so much benefit for so many months.

DR. ALBERT SOILAND, Los Angeles: It seems evident that all the workers with lead have arrived at approximately the same conclusion; yet when we view the subject of cancer in its human aspect and with the knowledge that we do not have a remedy for cancer, we must listen to such physicians as Blair Bell and his associates, gentlemen of unquestionable professional status, who have returned useful people to society after they had been hopelessly and dangerously ill from cancer. Whether, as Dr. Macht believes, the trouble lies in faulty technic with lead, or lack of knowledge of the lead compounds, I do not know, but that appears to be the proper angle from which to approach the subject of lead therapy. The question of irradiation and lead is, I think, partially solved, at least to us in our own work. When the lead was used after irradiation, we did not get as good results as when the lead was used before irradiation. We had one patient, a woman, who had been saturated with irradiation and was breaking down under it. She was given lead and became worse. She was then given a little more irradiation and responded remarkably well. I believe that this subject is of sufficient importance for us to continue carefully along the lines indicated.

DR. H. J. ULLMANN, Santa Barbara, Calif.: I was surprised to hear Dr. Macht say that the phosphate was much more toxic than metallic lead, for we have found just the opposite to be true. Dr. Kilgore spoke of using the lead after irradiation. We have been rather impressed with the fact that most of the patients with cancer of the breast that responded well have had a great deal of irradiation and have become radio resistant. To give such person lead, to see the tumor begin to regress slowly and then, after irradiation with from one tenth to one twentieth of a full dose given every other day, to see the tumor actually melt away is surprising. Practically all of these patients have been either nearly moribund or in an absolutely hopeless condition. Nobody would ever consider for a moment that irradiation alone could affect them. We have tried giving small, frequent doses and have found such methods valueless and the resulting toxemia more pronounced. It is essential that the patient be in the hospital and that the largest safe dose be used at intervals, depending on conditions. Small doses have little or no effect on tumors. We have returned to larger doses and have had better results. We have never used metallic lead solutions that were more than 24 hours old. We consider a full course 400 mg. or more. In treating anemias we make transfusions according to the clinical condition and often start a patient with a hemoglobin of 65 per cent on lead. We have had patients do fairly well with a hemoglobin of 35 or 40 per cent, and even as low as 29 per cent, for a week or more and slowly build up without transfusion. The patients that we have allowed to go home between treatments have become ill from gastro-intestinal disturbances, and we believe the reason is that their family physician does not appreciate the necessity of forcing calcium and alkalis the moment they have the slightest sign of nausea or anorexia, and when the vomiting stage is reached it is difficult to stop. There were intestinal symptoms with vomiting and belching in one patient after two doses. At autopsy we found the liver to be 95 per cent carcinomatous. Lead injures the liver and there was insufficient tissue left to carry on with. We consider the combating of the lead symptoms extremely important. We give calcium when the patients have toxic symptoms, and when they have not, we either produce an acidosis or give parathyroid extract to mobilize the lead. We believe that some persons store the lead promptly and therefore are not sick. In some it continues circulating, and it is a clinical problem, therefore, when to give calcium and when parathyroid extract. There was no kidney injury in our patients.

CHOLECYSTOGRAPHY AND GASTRIC ANACIDITY

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Cholecystography has been established as an invaluable aid in the diagnosis of gallbladder disease, but at the same time we have learned that it is not infallible. It is largely a test of the functional ability of the biliary system, and if the dye is given orally, as is our custom, the factor of absorption from the gastro-intestinal tract cannot be overlooked. In our own experience, however, the cholecystographic and operative observations have been remarkably consistant.

In a recent article, Hines [1] has concluded so positively that the presence of gastric anacidity interferes with the proper interpretation of the cholecystogram that we were moved to review our own series for confirmation or contradiction of his opinion.

Of 5,578 consecutive patients who were submitted to gastric analysis, seen in association with Dr. Douglas VanderHoof, we found 570 with anacidity, an incidence of 10.2 per cent. If one out of every ten patients with gastro-intestinal symptoms has anacidity, in a large series there would be considerable possibility of error in the cholecystographic interpretation, if Hines' conclusions are correct.

Hines states that in eleven persons with gastric achylia, the Graham-Cole test was abnormal in all. We have records of 219 persons who have had gastric analysis and cholecystography performed (by Dr. D. D. Talley, Jr.) at approximately the same time. The mode of administration of the dye was in accordance with the oral methods in general use. In most of the cases a very mild laxative was administered the night before. On the evening the dye was to be given, it was preceded

1. Hines, L. E.: Cholecystography in the Presence of Achylia Gastrica, J. A. M. A. 90: 2099 (June 30) 1928.

by a fat-free meal, the tetiothalein sodium being administered not less than two hours afterward. In about two thirds of these cases keratin coated capsules were used, while more recently the dye has been given in emulsion. Films were made as a routine after intervals of twelve and sixteen hours, with a third observation either at twenty hours (after a fatty meal) or at thirty-six hours. The twenty hour observation after a fatty meal is now a regular procedure, though it was not routine during the earlier part of this series.

Twenty of these 219 patients were found to have no free hydrochloric acid in the gastric contents. All the analyses were made by the fractional method. The histamine test was employed in fifteen of these patients. Thirteen showed no acid response to this test and only two responded with traces of free hydrochloric acid. The pertinent facts in their records will be found in the accompanying table. Absorption of the dye was excellent in every instance except in one patient, who vomited a portion of the capsules.

Results of Cholecystography on Patients with Gastric Anacidity

Patient	Gallbladder History	Gallbladder Visualization	Gallbladder Diagnosis
Mrs. S.	Suggestive	Normal	Negative
Miss D.	Suggestive	Normal	Negative
Mrs. W.	None	Normal	Negative
Mr. H.	Suggestive	Normal	Negative
Mrs. H.	Suggestive	Normal	Negative
Mrs. G.	Suggestive	Normal	Negative
Mrs. H.	Suggestive	Normal	Negative
Mrs. F.	Suggestive	Normal	Negative
Mrs. A.	None	Normal	Negative
Mrs. V.	Suggestive	Normal except retention at 36 hours	Operation for diseased appendix; gallbladder healthy
Mrs. P.	Suggestive	Normal except slight retention after fatty meal	Negative
Mrs. M.	Positive	12 and 16 hours faint; 36 hours none	Operation for gallstones
Mrs. M.	Suggestive	12 hours faint; 16 and 36 hours none	Operation for gallstones
Mrs. S.	Positive	12, 16 and 36 hours very faint	Operation for gallstones
Mrs. W.	Suggestive	12 hours faint; 16 and 36 hours none	Operation for cholecystitis
Miss W.	Positive	12 hours none; 16 hours faint; 36 hours none	Cholecystitis
Mr. B.	Positive	12, 16 and 36 hours none	Cholecystitis
Mrs. B.	Suggestive	Normal but shadow distorted	Pericholecystitis
Mr. H.	Suggestive	12 and 16 hours faint; 36 hours none	Carcinoma of liver
Mrs. I.	Suggestive	Vomited some of dye; 12 and 16 hours faint; 36 hours none	Negative

In ten of these twenty patients the cholecystographic observations were normal. In one the gallbladder failed to empty in the prescribed time but at laparotomy the organ appeared normal. Four had grossly abnormal gallbladders both from the roentgenographic standpoint and at operation. In two a typical history of biliary colic was considered sufficient confirmatory evidence of disease. Another had a normal function but a distorted shadow, interpreted as being the result of adhesions. One patient had a large, hard, nodular liver that was unquestionably carcinomatous, and disturbed liver function was considered sufficient explanation for the faint shadow obtained. In the last case reported the patient vomited a considerable quantity of the dye shortly after she had taken it, and this would explain the unsatisfactory gallbladder shadow in this instance. Unfortunately, we were unable to repeat the examination of this patient.

CONCLUSION

We may say that our observations not only fail to confirm those of Hines but are directly contradictory. The fact that he used the intravenous method while we used the oral might possibly explain the discrepancy, but this is hard to see, especially since the limit of error is admittedly greater by the oral method.

Professional Building.

ACTION OF MERCUROCHROME AND TINCTURE OF IODINE IN SKIN DISINFECTION

A COMPARATIVE STUDY *

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In 1925 we [1] presented an aqueous alcohol-acetone 2 per cent solution of mercurochrome-220 soluble as a preoperative skin disinfectant. On the basis of in vitro tests and of studies of the penetration and sterilization of rabbit and human skin, we then concluded that this solution was as good a skin disinfectant as "Kalmerid," 5 per cent trinitrophenol in alcohol, or 3.5 per cent tincture of iodine. We did not at that time include 7 per cent tincture of iodine in our study because of the impossibility of using such a concentration in genitourinary surgery. In 1927 we [2] published a further discussion, in which we reported additional experimental work on the value of this preparation of mercurochrome as a preoperative skin disinfectant. Since the appearance of these papers this solution has had wide and successful clinical trial in this and many other clinics.

EXPERIMENTS ON HUMAN SKIN

Believing that the final test of a skin disinfectant is its action under clinical conditions, we have continued our study by means of experiments on human skin. Our interest has been primarily to compare the action of 7 per cent tincture of iodine and of the aqueous alcohol-acetone solution of mercurochrome. Two methods have been used: first, that of scraping the skin to the point of capillary bleeding and taking cultures of the scrapings; second, that of taking cultures of pinch grafts of skin. These experiments are described separately.

Scraping Experiments.—The patient's skin was exposed, the upper and inner surface of the leg being used. Without previous cleansing, the drugs were applied and left on an area of 9 square centimeters for three minutes. At the end of this time the center of the area was scraped until capillary bleeding occurred. By means of moist sterile swabs, these scrapings were transferred to 5 cc. of sterile broth, the swab also being rubbed over the central area of the skin, only the edge of the treated area being avoided. All of the material so removed was plated at once, every cubic centimeter of the skin emulsion being added to 10 cc. of agar, cultures of all the skin being taken. Inhibition tests, made by inoculating such plates with *Staphylococcus aureus,* were positive. The number of colonies present were counted after forty-eight hours of inoculation at 37.5 C. Since it was impossible to use the same area of skin for control and for treatment, the results in

* From the James Buchanan Brady Urological Institute, Johns Hopkins Hospital.

1. Scott, W. W., and Hill, Justina H.: J. Urol. **14**: 135 (Aug.) 1925.
2. Scott, W. W., and Hill, Justina H.: Internat. S. Digest **3**: 195 (April) 1927.

any one test cannot be compared exactly, although the control and the treated areas were invariably taken from the same region and from skin which had presumably been under the same conditions. It is also evident that in this type of experiment it is impossible to be sure that organisms have not fallen on the skin after treatment, either during exposure to the drug or during scraping, so that the presence of occasional colonies is insignificant.

TABLE 1.—*Summary of Tests on Unwashed Human Skin, with One Application of Drug for Three Minutes, Followed by Scraping and Plating of Broth Suspensions of the Skin Particles*

Test No.	Colonies from Untreated Skin	Colonies from Skin Treated with 7% Tincture of Iodine	Colonies from Skin Treated with Aqueous Alcohol-Acetone 2% Mercurochrome	Colonies from Skin Treated with Alcohol, Acetone and Water
1	200 plus	14	3	..
2	200 plus	2	3	..
3	200 plus	2	2	..
4	200 plus	20	1	..
5	11	4 (1 margin)	0	..
6	11	4	2 (2 margin)	..
7	20	0	0	..
8	20	6 (1 margin)	4 (1 margin)	..
9	200 plus	0	0	..
10	200 plus	0	0	..
11	200 plus	0	0	..
12	200 plus	0	0	..
13	3	0	0	0
14	3	0	0	0
15	200 plus	0	2	2
16	200 plus	4	2	1
17	10	0	0	0
18	10	0	0	1
19	8	0	0	1
20	8	0	0	0
21	2	1	0	3
22	2	0	1	2
23	1	4	0	4
24	1	5	0	1
25	100 plus	0	0	100 plus
26	100 plus	2	0	100 plus
27	100 plus	0	6	100 plus
28	150	5	10	4
29	150	16	23	2
30	300	1	0	24
31	300	3	4	65
32	27	6	8	13
33	500	0	2	250
34	300	3	20	300
35	300	2	8	250
36	500	0	8	260
37	250	7	4	36
38	20	6	0	50
39	135	1	0	27
40	200	0	2	16
41	32	0	0	0
42	36	3	2	0
43	54	4	3	9
44	20	0	0	6
45	450	1	0	27
46	540	5	0	10
47	63	0	1	34
48	200	6	6	5
49	72	2	7	11
50	27	0	0	2
Total No. colonies	7,096 plus	139	134	...
Sterile	0	22 (48%)	25 (50%)	6 (15.7%)

The results of these fifty scraping experiments are summarized in table 1. From this it will be seen that while the untreated skin showed more than 7,000 colonies, only 139 were found in the iodine series and only 134 in the mercurochrome. Since the areas used were 9 square centimeters, these results may be expressed roughly in terms of bacteria per square centimeter. Thus, the untreated skin had 15.5 per square centimeter, and in view of the fact that in some cases the colonies were too numerous to count accurately, this may be increased fairly to twenty, which would represent an average of the number of organisms on normal human skin as measured by this method. After treatment with 7 per cent tincture of iodine, however, the number was only 0.308 per square centimeter, and after mercurochrome it was only 0.297. Because some of these colonies counted were undoubtedly extraneous, these figures should really be even lower.

The alcohol, acetone water control in these experiments showed a reduction in most of the tests, with sterilization in only six, or 15 per cent.

Pinch Grafts.—These were done under local anesthesia with procaine hydrochloride, the pinch graft being obtained in the usual way in which that procedure is carried out in operating rooms. The grafts were placed in 10 cc. of broth and then transferred by means of sterile platinum loops to other tubes of 10 cc. of broth to remove bacteriostatic action. One application of the drug for three minutes was used in each test. The results are summarized in table 2. In addition thirteen other experiments were done, in which the controls remained sterile, which is an interesting finding in regard to the number of bacteria present on normal skin. Considering the twenty-seven experiments in which the controls were positive, it is seen that thirty-two, or 86.5 per cent, of the 7 per cent tincture of iodine were sterile, and thirty, or 81 per cent, of the mercurochrome tests, a difference within the range of experimental variation. If all the experiments are summarized, it is found that with the untreated controls thirty-seven, or 74 per cent, showed growth, as well as seven, or 14 per cent, of the iodine tests and eleven, or 22 per cent, of the mercurochrome tests.

By both of these methods, it seems evident that both the 7 per cent tincture of iodine and the aqueous alcohol-acetone 2 per cent mercurochrome solution are efficient disinfectants of uncleaned human skin, the differences in the results with the two drugs being only within the limits of experimental variation. The experiments in skin scraping also show that the normal flora of the skin is not excessively numerous; that is, it is not comparable to the number of bacteria present in pure broth cultures of organisms.

TABLE 2.—*Summary of Pinch Grafts of Unwashed Human Skin, Treated with One Application for Three Minutes of 7 Per Cent Tincture of Iodine, or Aqueous Alcohol-Acetone 2 Per Cent Mercurochrome, or Untreated*

Test No.	7% Tincture of Iodine	Aqueous Alcohol-Acetone Mercurochrome, 2%	Untreated Skin
1	Sterile	Sterile	Growth
2	Sterile	Sterile	Growth
3	Sterile	Sterile	Growth
4	Sterile	Sterile	Growth
5	Sterile	Sterile	Growth
6	Sterile	Sterile	
7	Sterile	Scant growth	Growth
8	Sterile	Scant growth	Growth
9	Sterile	Sterile	Growth
10	Growth	Sterile	Growth
11	Sterile	Sterile	Growth
12	Sterile	Growth	Growth
13	Sterile	Growth	Growth
14	Growth	Sterile	Growth
15	Sterile	Sterile	Growth
16	Growth	Growth	Growth
17	Growth	Growth	Growth
18	Sterile	Sterile	Growth
19	Sterile	Growth	Growth
20	Sterile	Sterile	Growth
21	Sterile	Sterile	Growth
22	Sterile	Sterile	Growth
23	Sterile	Sterile	Growth
24	Sterile	Sterile	Growth
25	Sterile	Sterile	Growth
26	Sterile	Sterile	Growth
27	Sterile	Sterile	Growth
28	Sterile	Sterile	Growth
29	Sterile	Sterile	Growth
30	Sterile	Sterile	Growth
31	Sterile	Sterile	Growth
32	Sterile	Sterile	Growth
33	Sterile	Sterile	Growth
34	Sterile	Sterile	Growth
35	Sterile	Sterile	Growth
36	Growth	Sterile	Growth
37	Sterile	Sterile	Growth
Sterile	32 (86.5%)	30 (81%)	
Growth	5 (13.5%)	7 (18.9%)	

We are therefore unable to agree entirely with the conclusions reached by Simmons,[3] in the paper which he read before the Washington Branch of the Society of American Bacteriologists, March 12, 1928. His conclusions were as follows:

1. Mercurochrome-220 soluble (2 per cent aqueous) is not effective in disinfection of the unbroken skin.

2. The 2 per cent alcohol-acetone-aqueous solution of mercurochrome and the 5 per cent alcoholic solution of mercurochrome are slightly better than the watery solution but are comparatively feeble bactericidal agents when applied to the unbroken skin, as compared with tincture of iodine solution.

3. The 3.5 per cent alcoholic solution of iodine is more actively bactericidal on unbroken skin than any of the mercurochrome solutions tested.

4. From the standpoint of bactericidal action, tincture of iodine (U. S. P.) was found to be far superior to any of these solutions when used on unbroken skin for disinfection purposes.

The first of Simmons' conclusions, that the 2 per cent aqueous solution of mercurochrome is not effective in disinfection of the unbroken skin, is in entire accord with our previous results. In our 1925 paper[1] (page 139) we stated that "watery solutions of mercurochrome were uniformly less efficient in disinfecting skin surfaces than iodine solutions." It is obvious that no aqueous solution of any drug should be considered for skin disinfection if preparations containing fat solvents are available, and that the behavior of aqueous and of alcoholic solutions on skin are not comparable. It was because of this very fact that we first approached the problem of making a mercurochrome solution which should contain alcohol and acetone.

With the rest of Simmons' conclusions we are unable to agree, because in our opinion they are not justified by the experiments he has done, for two reasons:

1. No alcohol controls for the in vitro tests with tinctures of iodine were included.

2. Throughout the experiments, adequate inhibition controls have been omitted.

In order to support our views it is necessary to enter briefly into a discussion of bacteriologic methods, including both in vitro tests and experiments on skin disinfection. Certain general principles may be outlined which establish the validity of such tests and the fairness of making any clinical applications from such studies.

1. *Validity of the Tests.*—Both inhibition and culture dilution controls must be positive if sterile transfers are to be attributed to drug action.

2. *Clinical Application of the Results of Experimental Studies.*—If such applications, or implications, are to be made, the tests must bear some relation to the clinical use of the drug. The number of bacteria used in the tests may be in excess of the number normally present on the skin, but it cannot fairly be many thousand times that number. This involves determining the number of bacteria present normally and working with multiples thereof, as has recently been done by Reddish and Drake[4] on rabbit skin. Also, the tests should be done either under clinical conditions or under conditions that resemble these as closely as possible.

IN VITRO TESTS

In regard to the in vitro germicidal action of mercurochrome, we have long since shown that this drug may not be classed with the most powerful germicides, its toxicity being correspondingly lower. It does, however, exert strong bactericidal and bacteriostatic action. In the first presentation of the drug, Young, White and Swartz[5] found that the aqueous solution in a dilution of 1:800 killed *B. coli* in one minute in p_H 6.4 urine and *Staphylococcus aureus* in the same medium and time in a drug dilution of 1:1,000. In a later paper[6] it was shown that the killing dilution of the drug against three strains of *Staphylococcus aureus* in 50 per cent serum in one minute was 1:90; in one hour, 1:200. In salt solution, the killing dilution against the same cultures was 1:90 or 1:100 in one minute and 1:70,000 through 1:200,000 in one hour. This shows clearly that the drug has germicidal action and that in strong concentration it is bactericidal in serum. In our 1925 and 1927 papers, we showed that the aqueous alcohol-acetone 2 per cent mercurochrome killed *Staphylococcus aureus* in one minute, but the alcohol-acetone-water control did not kill in one minute, sometimes doing so in five minutes and always in ten minutes, at room temperature.

Simmons[3] has modified the method that we described in our 1925 paper but which we abandoned because we felt that the serial dilution method for transfers was less satisfactory than a method by which all of the transfer was cultured in a sufficient amount of medium to do away with inhibition. The first method that we used was not employed to test 7 per cent tincture of iodine, nor do we consider it suitable for a drug of such high bacteriostatic action.

Simmons describes the method he used for his in vitro tests as follows:

> One cubic centimeter amounts of broth cultures of the test bacteria were mixed with 5 cc. amounts of the different antiseptic-test solutions. After a definite period of time, 0.1 cc. of the drug-bacteria mixture was transferred to a tube containing 10 cc. of nutrient broth from which a second transfer of 1 cc. was carried to a second tube containing 10 cc. of broth. Since in certain instances bacteriostatic action was observed even in this second broth dilution-culture, it was found desirable to further control the experiment by transferring 1 cc. of material from the latter to a third tube of broth and 1 cc. to a flask containing 100 cc. of broth. An additional check was made in each experiment by preparing similar dilutions of the chemicals in culture media and inoculating them with pure cultures of the test organisms.

By this method Simmons found that the 2 per cent aqueous solution of mercurochrome failed to kill *Staphylococcus aureus* in ten minutes, killed *B. coli* in one minute, *Streptococcus pyogenes* in two and one-half minutes and did not kill *Streptococcus scarlatinae* "Dick 1" in five minutes. A longer test was not given for this organism. The aqueous alcohol-acetone 2 per cent mercurochrome solution, an alcohol-acetone-water control and both the 3.5 and 7 per cent tinctures of iodine killed these organisms in one minute. Anthrax spores (age of culture and the medium in which grown are not stated) were killed in one hour by 7 per cent tincture of iodine, in from four to ten hours by the 3.5 per cent tincture of iodine and were not killed in ten hours by the other solutions.

No detailed description of inhibition controls, no culture controls and no tests with 85 per cent alcohol to

3. Simmons, J. S.: The Bactericidal Action of Mercurochrome-220 Soluble and Iodine Solutions in Skin Disinfection, J. A. M. A. **91**: 704 (Sept. 8) 1928.

4. Reddish, G. F., and Drake, W. E.: Mercurochrome-220 Soluble and U. S. P. Tincture of Iodine, J. A. M. A. **91**: 712 (Sept. 8) 1928.

5. Young, H. H.; White, E. C., and Swartz, E. O.: New Germicide for Use in Genito-Urinary Tract: "Mercurochrome-220," J. A. M. A. **73**: 1483 (Nov. 15) 1919.

6. Young, H. H.; White, E. C.; Hill, Justina H., and Davis, D. M.: Surg. Gynec. Obst. **36**: 508 (April) 1923.

control the tinctures of iodine are given by Simmons. If these are added, the following facts become evident:

1. With 7 per cent tincture of iodine only the fourth and some of the third transfers by this method are sufficiently free from drug inhibition to allow the growth of *Staphylococcus aureus* 209.

2. While the culture dilution controls are positive for all four transfers when the maximum number of organisms, such as would be present at the start of the test

Fig. 1.—Inhibition of bacterial growth on an agar plate inoculated with Staphylococcus aureus and then rubbed with a moist swab from skin treated with 7 per cent tincture of iodine.

are used, if the number of bacteria is reduced even 1:10, 1:100 or 1:1,000, there is a marked reduction in the growth of the transfers. When the number of organisms is reduced 1:10,000, the third and fourth transfers remain sterile because of overdilution of the culture. That is, many organisms might have remained alive and not have been measured in these 7 per cent tincture of iodine tests.

3. The 85 per cent alcohol control killed the non-spore-forming test organisms in one minute, so that conclusions could not be drawn as to the bactericidal action of the iodine.

With these additions we confirm the results of Simmons' in vitro tests with the non-spore-forming organisms. It is evident, however, that in regard to preparations for skin disinfection, conclusions cannot be drawn from them except as to the action of the alcohol and the alcohol-acetone-water controls.

We have also studied the action of these drugs by the method proposed by Reddish.[7] This consists essentially of inoculating 5 cc. of drug with 0.5 cc. of a broth culture of the test organisms, certain requirements being made as to the mediums used and the previous transfers of the culture. By means of a 4 mm. loop, transfers of the drug-organisms mixture are made at the desired times to the standard broth. Our only modification of the Reddish method as described by him [7] has been to transfer not to 10 cc. of broth but to flasks of 200 cc. of this medium. Inhibition controls of these were made by adding one loopful of a mixture of 5 cc. of drug and 0.5 cc. of sterile broth and by inoculation with one loopful of a mixture of 5 cc. of salt solution and 0.5 cc. of culture. These controls were invariably positive. Culture dilution controls similar to those used with the Simmons method were positive through a 1:100,000 dilution of culture. Tests were done at room temperature. Because the preceding experiments had shown that the *Staphylococcus aureus* 209 culture was the most resistant of the nonsporulating organisms tested, we limited our study by the Reddish method to this culture and to spores of *B. anthracis*.

By this method it was found that aqueous alcohol-acetone 1 and 2 per cent mercurochrome solutions, both the 3.5 and 7 per cent tincture of iodine, and the 85 per cent alcohol killed staphylococcus 209 in one minute. The alcohol-acetone-water control failed to kill in one minute but killed in five minutes. The 2 per cent aqueous solution of mercurochrome, when tested at room temperature, failed to kill in one minute, showed growth only after twenty-four hours in the five minute test, and killed in ten minutes. A control with a solution of 7 Gm. of iodine, 5 Gm. of potassium iodide and 100 cc. of water also failed to kill *Staphylococcus aureus* 209 in one minute by both methods.

We tested 25 day old broth cultures of anthrax spores by three methods, first that of Simmons, second, that of Reddish, transferring to 200 cc. of broth instead of to ten, and, third, a modified Simmons test, in which the initial transfer of 0.1 cc. was to 10 cc. of broth, which was then divided, 5 cc. being placed in one flask of 200 cc. of broth and 5 cc. in a second similar flask. The culture controls by these methods were positive in ten hour tests; the inhibition controls by the second and third tests were positive throughout.

By two of the methods used, the second and third, both tinctures, the alcoholic acetone 2 per cent mercurochrome and the 2 per cent aqueous mercurochrome killed in one hour. By the Simmons method, the 2 per cent aqueous mercurochrome failed to kill in one hour but killed in ten hours, the other drugs killing in one hour, with the exception of 3.5 per cent tincture of iodine, in which one of the three tests at this time was positive.

ANIMAL EXPERIMENTS

In our previous studies we found that the aqueous 2 per cent mercurochrome solution was experimentally

Fig. 2.—Inhibition of bacterial growth on an agar plate inoculated with Staphylococcus aureus and then rubbed with a moist swab from skin treated with 3.5 per cent tincture of iodine.

unsatisfactory as a skin disinfectant. However, on rabbit skin, swabbed with cultures, the aqueous acetone-alcohol 2 per cent mercurochrome gave excellent results, 3.5 per cent tincture of iodine, "Kalmerid" and trinitrophenol slightly less satisfactory results, and the alcohol-acetone-water control caused a reduction of the number of bacteria, with only rare sterilization. These

7. Reddish, G. F.: Drug Markets **20**: 494 (April) 1927.

tests were done both by streaking with the same transfer swab two agar plates, and by transferring excised pieces of skin to 150 cc. of broth. By the former method there was some inhibition by the drugs on the first plate, but not on the second, while there was no demonstrable inhibition by the broth method. We did not scrape the skin in our studies because such a method was not parallel to usual surgical procedure, in which a clean cut is made through one plane of skin.

TABLE 3.—*Action of 7 Per Cent Tincture of Iodine, and of Alcohol-Acetone 2 Per Cent Mercurochrome on Rabbit Skin Heavily Infected with Staphylococcus Aureus*

Drug	Time Culture Remained on Skin Before Treatment	Time Drug Remained on Skin	Results of Subcultures
7% tincture of iodine not removed with alcohol	15 min.	5 min.	Heavy growth of Staphylococcus aureus
	15 min.	5 min.	Heavy growth of Staphylococcus aureus
	2 hours	5 min.	Heavy growth of Staphylococcus aureus and a gram-positive bacillus
	24 hours	5 min.	Heavy growth of Staphylococcus aureus
	15 min.	5 min.	Sterile
	2 hours	5 min.	Sterile
	24 hours	5 min.	Heavy growth of Staphylococcus aureus
7% tincture of iodine removed with alcohol, 70%, after 5 min. for 2 min.	15 min.	5 min.	Heavy growth of Staphylococcus aureus
	15 min.	5 min.	Heavy growth of Staphylococcus aureus
	24 hours	5 min.	Heavy growth of Staphylococcus aureus
	24 hours	5 min.	Heavy growth of Staphylococcus aureus
70% alcohol	15 min.	2 min.	Heavy growth of Staphylococcus aureus
	15 min.	2 min.	Heavy growth of Staphylococcus aureus
	24 hours	2 min.	Heavy growth of Staphylococcus aureus
	24 hours	2 min.	Heavy growth of Staphylococcus aureus
Aqueous alcohol-acetone 2% mercurochrome	15 min.	5 min.	
	15 min.	5 min.	Heavy growth of Staphylococcus aureus
	2 hours	5 min.	Heavy growth of Staphylococcus aureus
	24 hours	5 min.	Heavy growth of Staphylococcus aureus
	24 hours	15 min.	Heavy growth of Staphylococcus aureus
	15 min.	5 min.	Heavy growth of Staphylococcus aureus
	2 hours	5 min.	Heavy growth of Staphylococcus aureus
	15 min.	5 min.	Heavy growth of Staphylococcus aureus
	24 hours	5 min.	Heavy growth of Staphylococcus aureus
Aqueous alcohol-acetone mercurochrome removed with 70% alcohol	15 min.	5 min.	Heavy growth of Staphylococcus aureus
	15 min.	5 min.	Heavy growth of Staphylococcus aureus
	24 hours	5 min.	Heavy growth of Staphylococcus aureus
	24 hours	5 min.	Heavy growth of Staphylococcus aureus

By the method used by Simmons, the shaven skin of rabbits was rubbed with massive cultures, and one hour later the test drug was "painted liberally" (number of applications not stated) over the 5 cm. square, i. e., 25 square centimeters, used for each test. The time used for these tests was five, ten and twenty minutes. At the end of any given time, transfers were made by first rubbing the area with a moist sterile swab and inoculating a plate of solid medium and 100 cc. of broth. Secondly, a smaller area of the same square was rubbed with another moist sterile swab and cultures made similarly. Finally, the central part of the treated area was scraped with a sterile scalpel until capillary bleeding occurred, the scrapings were placed in a petri dish, and an agar plate was poured. Since the results given by Simmons are estimated in the number of colonies present, it must be concluded that he drew his results from the growth on his plates.

To the best of our knowledge, however, the conclusions drawn from these experiments are not valid. To prove our statement, we much consider the surface and the deep skin tests separately.

Surface Sterilization.—These tests are invalid throughout, because by the method used enough drug is carried over to exert bacteriostatic action on the transfers. Let any one who will take a plate of agar and inoculate the surface by smearing with a broth culture of *Staphylococcus aureus.* If such a plate is then stroked with a moist swab which has been rubbed over 25 sq.cm. of skin treated with 3.5 or 7 per cent tincture of iodine or the aqueous alcohol-acetone 2 per cent mercurochrome and incubated for twenty-four or forty-eight hours, the places on the plate touched by the drug-containing swab will be clear. There is even a clear zone around the actual line of contact. The organisms grow in great numbers on the rest of the plate. Even the second transfers made as described by Major Simmons show this inhibition with the iodine

Fig. 3.—Inhibition of bacterial growth on an agar plate inoculated with Staphylococcus aureus and then rubbed with a moist swab from skin treated with alcohol-acetone-aqueous 2 per cent mercurochrome.

and mercurochrome solutions, not with the alcohol, acetone and water controls. It is therefore inexplicable to us how Simmons got the results he did with mercurochrome, his iodine results being plainly due to such inhibitions. All of his surface tests must therefore be considered invalid. The same objection may be made fairly to the work of Rodriguez,[8] who did not run glycerin controls or tests with mercurochrome in glycerin.

Deep Skin Sterilization.—Inhibition controls with this third transfer as described by Simmons are satisfactory. We therefore endeavored to find out whether or not it was possible to sterilize the skin under such extreme conditions. We applied heavy twenty-four hour broth cultures of staphylococcus 209 to the shaven skin of rabbits and allowed the culture to dry on for fifteen minutes, two hours or twenty-four hours. After one heavy application of the test drug for two, five or fifteen minutes, the center of the treated area was scraped to capillary bleeding with a sterile scalpel. The scrapings were transferred by means of a moist sterile

8. Rodriguez, F. E.: Mercurochrome and Iodine as Disinfectants of Mucous Membrane of Mouth, J. A. M. A. **91**: 708 (Sept. 8) 1928.

swab to 2 cc. of broth. A subculture of this emulsion was at once taken by transferring 1 cc. each to 30 cc. of broth. Inhibition controls by this method were positive, as were untreated culture controls. Our results are summarized in table 3.

This table shows that under such extreme conditions neither the 7 per cent tincture of iodine nor the aqueous alcohol-acetone 2 per cent mercurochrome can regularly sterilize the skin. It is true that two of the iodine tests, in which the drug was not removed with alcohol, were sterile, but five tests with the drug under similar conditions were positive, as were all the tests with the 7 per cent tincture in which it was removed with 70 per cent alcohol. It is evident, therefore, that there are extreme experimental conditions in which neither of the drugs can sterilize the skin. But, as has been shown, these experiments bear little relation to the actual conditions of human skin sterilization, and are chiefly of academic interest.

The experiments of Simmons on mouse skin infected with anthrax spores are of great interest. He reports only two mice treated with the alcohol-acetone-aqueous 2 per cent mercurochrome, both of which died, four treated with 7 per cent tincture of iodine which lived, and three untreated controls. In our opinion the series is too small to allow conclusions to be drawn. It is impossible to study this problem thoroughly in the available time, but a report on this will be given at a later date.

To summarize the animal experiments, therefore, it may be stated that the surface sterilization tests by the Simmons method are invalid on account of the bacteriostatic action of the transfers, while it has been impossible to confirm Simmons' finding that the tinctures of iodine are efficient in the sterilization of deep skin under extreme experimental conditions.

COMMENT

These experiments indicate the difficulty of evaluating any drug. It is possible to use such extreme experimental conditions that the test drugs cannot act efficiently. The difficulty of distinguishing between bactericidal and bacteriostatic action may lead to equally misleading conclusions. Granted the validity of a given experimental method, the application of its results to clinical use should be made only when the experimental and the clinical conditions are comparable.

In view of the comparative study that has been made, the criteria of a satisfactory skin disinfectant may be cited. They include efficient bactericidal action within the time allowable in preoperative preparation, this being correlated with a sufficient quickness in drying so as not to cause delay; the ability to penetrate the skin débris, which necessitates the presence of a fat solvent; failure to irritate excessively the tissue on which it is used, and, lastly, a sufficient color index and durability of staining to outline the operative field clearly. Moreover, it is desirable that the drug should not cause precipitation when mixed with blood, because it is at times necessary to carry some of it into the operative wound.

We believe that the aqueous alcohol-acetone 2 per cent solution of mercurochrome more fully meets these criteria than the 3.5 or 7 per cent tincture of iodine. The mercurochrome solution, in fact, seems to meet all these requirements. The iodine solutions, on the other hand, especially the 7 per cent tincture, although sufficiently bactericidal, leave, when removed by alcohol, a poorly defined operative field. They frequently irritate the skin, and in cases of iodine idiosyncrasy may even prepare the field for secondary infection. The use of 7 per cent tincture of iodine on the delicate epidermal covering of the external genitalia cannot be considered. The precipitation occurring when these iodine tinctures are mixed with blood not only makes their use in wounds of doubtful germicidal value but renders their use unsuitable in wounds in which the mercurochrome preparation may be used with impunity, as is done in this clinic as a final procedure before closure.

SUMMARY

1. Methods of testing skin disinfection have been studied, with emphasis on the necessity of distinguishing between bactericidal and bacteriostatic action.

2. It has been shown that there are extreme experimental conditions under which neither the 7 per cent tincture of iodine nor the alcohol-acetone-aqueous 2 per cent solution of mercurochrome will sterilize.

3. We reiterate our previous statement that the aqueous 2 per cent solution of mercurochrome is not efficient as a disinfectant for the unbroken skin, but we do not believe that comparisons can be made fairly between it and preparations containing fat solvents.

4. It has been shown that the 7 per cent tincture of iodine and the alcohol-acetone-aqueous 2 per cent solution of mercurochrome are equally effective in the sterilization of uncleansed human skin, a comparative study of the action of these drugs giving results which differ only within the limits of experimental variation.

THE RELIEF OF PAIN BY NERVE SECTION *

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PHILADELPHIA

The most distressing symptom of any disease is pain. If pain is present it is always the cause of bitter complaint. We can struggle along with disability or deformity provided it is painless, but with the onset of pain we soon plead for relief. And since relief can often be afforded by relatively simple surgical procedures directed against the sensory pathways leading from the areas involved, the sufferer should always be advised that this is possible. He can then decide for himself whether his pain is of sufficient severity to require operative intervention.

Since the relief of pain in trigeminal neuralgia is frequently practiced in the clinic with which I am associated, I became interested in other conditions causing distress within the sensory distribution of the fifth pair of cranial nerves.[1] Cancer of the face is one of these. Because it primarily attracted attention, and because success here led to similar attempts in other parts of the body, I shall discuss it first.

Malignant disease of whatever type about the cheek, lips, tongue or nasal sinuses is frequently a distressingly

* From the Neuro-Surgical Clinics of the University of Pennsylvania Hospital, and the Post-Graduate Hospitals of the University of Pennsylvania.

* Read before the Section on Nervous and Mental Diseases at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. Grant, F. C.: A Suggestion for the Relief for the Pain from Carcinoma of the Mouth and Cheek, Ann. Surg. **87**: 494-498 (Feb.) 1925; Relief for the Pain in Carcinoma of the Face, J. A. M. A. **86**: 173-175 (Jan. 16) 1926. Mixter, W. J., and Grant, F. C.: The Relief of Pain in Carcinoma of the Face, Ann. Surg. **87**: 179-185 (Feb.) 1928.

painful condition, particularly when far advanced. If to the presence of an open sloughing painful sore, producing a filthy breath and foul taste, is added the knowledge that the ulcer is a cancer with meager chances of ultimate recovery, it is not difficult to account for the mental depression in which many of these patients are found. But the most demoralizing factor is the pain, which results from the initial growth or from excision, electrocoagulation, the implantation of radium needles or deep roentgen therapy. And it is only too often a constant pain day and night, frequently aggravated by the procedures directed against the growth, so that the necessity for using opium, and a willingness to continue proper treatment, since it is no longer painful, have enabled us to prolong the lives of many patients, in some to effect cures, and in most instances to render the last period of their lives at least less horrible to themselves and to their friends.

The method used in relieving pain in the trigeminal distribution depends on its situation. The more closely the growth and the distress it produces is limited to the trigeminal area, the better will be the result. As can be seen from table 1, a cancer of the floor of the mouth or tonsil has been most difficult to render insensitive, since

TABLE 1.—*Location of Growth and Type of Treatment and Results* *

Location of Growth	No. of Cases		Treatment	Result
Maxillary antrum and upper jaw	16			
Pain relieved	11			
Pain partly relieved	1			
Pain not relieved	4			
Died	1			
		Alcohol injections...12	Second division.....7 cases	Pain relieved.....3 cases Pain not relieved.....4 cases
			Third division.....2 cases	Pain relieved.....2 cases
			Second and third divisions...3 cases	Pain relieved.....2 cases Pain 50% relieved.....1 case
		Operation..... 4	Avulsion of sensory root.....3 cases	Pain relieved.....3 cases One death, meningitis
			Intracranial neurectomy second and third divisions..1 case	Pain relieved.....1 case
Posterior ethmoid cells and maxillary antrum	1	Operation..... 1	Avulsion of sensory root.....1 case	Pain relieved, 60%
Cheek skin	10			
Pain relieved	7			
Pain partly relieved	3			
Pain not relieved	0			
Died	0			
		Alcohol injections... 3	Third division.....3 cases	Pain relieved.....2 cases Pain 50% relieved.....1 case
		Operation..... 7	Avulsion of sensory root.....2 cases	Pain relieved.....2 cases
			Intracranial neurectomy second and third divisions..5 cases	Pain relieved.....3 cases Pain 75% relieved.....2 cases
Lower jaw	9			
Pain relieved	7			
Pain partly relieved	2			
Pain not relieved	0			
Died	0			
		Alcohol injections... 4	Second and third divisions...2 cases	Pain relieved.....2 cases
			Third division.....2 cases	Pain relieved.....1 case Pain partly relieved.....1 case Pain in neck remained
		Operation..... 5	Avulsion of sensory root.....1 case	Pain relieved.....1 case
			Intracranial neurectomy second and third divisions..4 cases	Pain relieved.....3 cases Pain 50% relieved.....1 case
Tongue	8			
Pain relieved	4			
Pain partly relieved	3			
Pain not relieved	0			
Died	1			
		Alcohol injections... 6	Third division.....6 cases	Pain relieved.....4 cases Pain 50% relieved.....2 cases
		Operation..... 2	Intracranial neurectomy second and third divisions..2 cases	Pain relieved, later spread to neck.....1 case Died of shock.....1 case
Tongue and floor of mouth	12			
Pain relieved	3			
Pain partly relieved	4			
Pain not relieved	5			
Died	0			
		Alcohol injections...10	Second and third divisions...2 cases	Pain not relieved.....2 cases
			Third division.....8 cases	Pain relieved.....3 cases Pain 50% relieved.....3 cases Pain not relieved.....2 cases
		Operation..... 2	Avulsion of sensory root.....1 case	Pain not relieved.....1 case
			Intracranial neurectomy second and third divisions..1 case	Pain 75% relieved.....1 case

* Least satisfactory results were obtained when the floor of the mouth was involved.

sufferer dreads to return for further treatment. Opiates in rapidly increasing quantities with all the gastrointestinal and other disturbances that follow their use are necessary before any reasonable degree of even temporary comfort can be obtained.

This intolerable situation can be relieved by blocking the sensory pathways supplying the face by alcohol injection or intracranial section of the appropriate branches of the trigeminal nerve. Once the pain has ceased, the patient can sleep, eat and carry on his affairs in a much more normal fashion. Treatment is no longer an ordeal. To be sure, the spread of the growth is in no wise affected by blocking the nerve. But, it is certain that the gain in weight and strength, the return to a more hopeful outlook on life, the freedom from the the cervical and other cranial nerves also supply these regions. Pain in the ear and throat is not affected by trigeminal section. Frequently, these subjects will have a major and a minor pain, the major in the trigeminal area, the minor elsewhere. Abolition of the major pain renders them relatively comfortable for a time, but then the persistence of the minor pain makes it eventually seem as severe as the other, and the measure of relief obtained may not be as great as expected. For this reason, a close description of the character and position of the pain is important, so that the proper operative procedure may be instituted and the degree of relief to be expected may be estimated.

The trigeminal nerve may be blocked in one of two ways, either by the injection of alcohol into the branch

or branches involved, or by open operation with avulsion of the whole sensory root or section of the appropriate divisions. Injection of alcohol is suitable only for relatively small lesions implicating an area supplied by a single division. Often the malignant growth may have involved the skin at the point at which the needle must be inserted to perform the injection or have disturbed the anatomic relationship of the nerve so that an accurate infiltration with alcohol cannot be made. However, this procedure frequently appeals to the patient because it does not require ether and seems to the uninitiated a relatively simple thing to do. While the results with it have been satisfactory, open operation is much to be preferred. Intracranial exposure of the trigeminal nerve with avulsion of the sensory root or section of the second and third divisions, depending on the extent of anesthesia required, is unquestionably the procedure of choice. Since most malignant growths causing pain lie in the lower two thirds of the face, complete avulsion of the sensory root is unnecessary. Section of the nerve trunks peripheral to the ganglion is a simple procedure and precludes the necessity of opening the dura and arachnoid. Furthermore, since the ophthalmic division is spared, eye complications are always avoided.

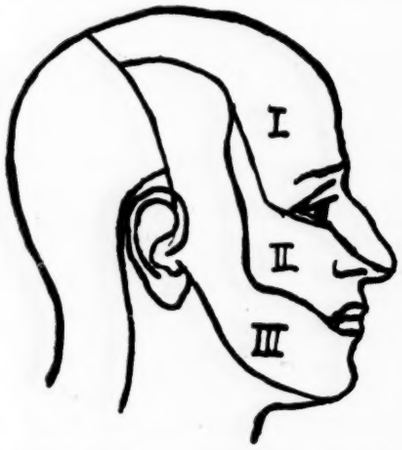

Fig. 1.—Sensory distribution of first, second and third divisions of fifth nerve on the skin surface of the face.

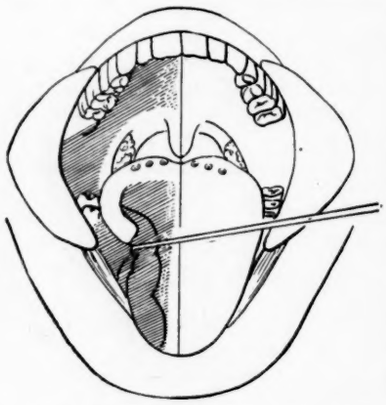

Fig. 2.—Distribution of postoperative anesthesia (shaded area) to touch, pain and temperature over the tongue, hard palate and anterior part of the soft palate on the right in a case of trifacial neuralgia. After Doyle (footnote 5).

Fig. 3. — Distribution of postoperative anesthesia (shaded area) to touch, pain and temperature over the lateral area of the nasal cavity, the hard palate and the anterior part of the soft palate on the right in a case of trifacial neuralgia. After Doyle (footnote 5).

If the malignant growth is situated superficially within the trigeminal area, the results from nerve block are very much more satisfactory than when the deeper areas of the face and mouth are involved. When the floor of the mouth, the tonsillar pillars or the accessory sinuses, especially the ethmoid or sphenoid, are the site of the lesion, complete permanent freedom from pain is less often obtained. The cancer may spread rapidly outside the zone of anesthesia and, by irritating adjoining nerves, cause in time a recurrence of the distress. Many of the patients sent to us for relief have had all the surgery, radium or roentgen therapy that can be given. Further attempts to control the spread of the disease are considered useless. Morphine has been given in varying amounts to keep them reasonably comfortable. If, following nerve section, the pain disappears and morphine can be given up, the result is considered successful. If after a time pain outside the trigeminal areas recurs but can be controlled easily by morphine until death, the procedure is termed a partial success.

Of the fifty-six patients suffering from cancer of the face, thirty-two were completely relieved of pain, fourteen were partly relieved, and in nine nerve block was ineffective. Among these nine patients, four showed extensive degeneration of the superior maxilla involving the accessory sinuses, while five had widespread involvement of the floor of the mouth. In the group completely relieved, twenty-five died comfortably within two years from metastases. Seven are receiving treatment, of whom two are apparently cured.

As a result of my experience in the last five years, I feel convinced that the most satisfactory and merciful way to handle a patient with an extensive malignant growth of the face which will require wide removal by knife or cautery, the implantation of many radium needles, or intensive and deep roentgen therapy is to render the cancer-bearing area and adjacent structures insensitive before the growth is attacked. Even if pain is not a prominent feature or even if it is absent when the patient is first seen, it is certain that no matter what treatment is instituted pain will sooner or later occur and persist.

Under morphine-scopolamine-procaine hydrochloride anesthesia, the external carotid on the side of the lesion should be tied, and the appropriate intracranial procedure carried through. Immediately afterward the growth may be removed or treated in any way desired without pain to the patient. If a cautery knife is to be used, the avoidance of the necessity for the use of ether

Fig. 4.—Patient with carcinoma of the face rendered pain free by intracranial neurectomy of second and third divisions of trigeminal nerve. Lesion excised without anesthesia; lived four months without pain. Courtesy of Drs. H. K. Pancoast and G. M. Dorrance.

as an anesthetic simplifies the procedure very much. The occlusion of the external carotid artery is a matter of choice. Since occlusion is often essential before extensive growths may be attacked, and because it renders the intracranial approach to the nerve entirely bloodless, ligation of the artery has quite frequently been carried out. Following nerve section not only is excision of the growth painless, but subsequent dressings, the insertion and removal of packing, the loosening of sequestrums or the fulguration of areas of possible recurrence in the wound can be conducted without inconvenience to the patient. Any degree of frequency or severity of local treatment aimed at more complete extirpation of the lesion is well tolerated, provided the manipulations are made in the anesthetic area. The difference in appearance between patients who have and who have not had the pain relieved by nerve block is so striking that once seen it makes a lasting impression.

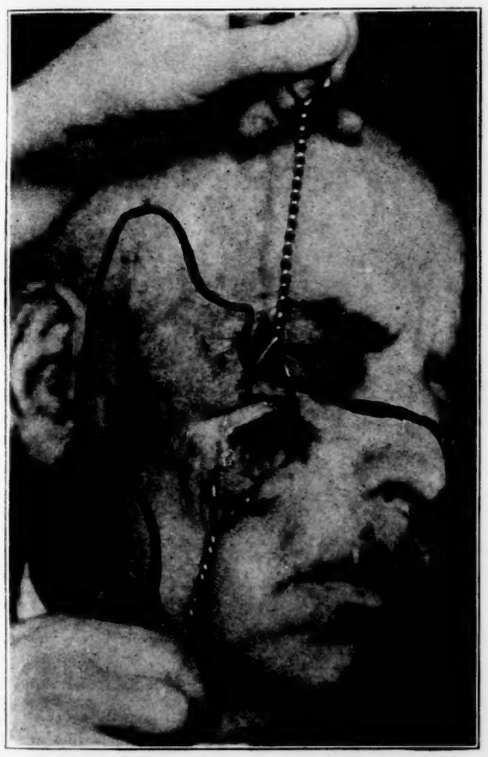

Fig. 5.—Patient with carcinoma of superior maxilla and maxillary antrum. Following intracranial neurectomy of the second and third divisions of the trigeminal nerve, the growth was removed by radioknife without anesthesia. The patient is pain free, and there is no evidence of recurrence at the end of eight months. Courtesy of Dr. G. E. Pfahler.

However, satisfactory as this procedure is in carefully selected cases, in certain of them the relief is not complete or permanent. Two complications may occur: the secondary or masked pain covered over originally by the major pain and not situated in the anesthetic area may become annoying, or metastases from the growth may appear in the glands of the neck and cause pain there beneath the angle of the jaw, in the throat, or deep in the ear, outside the trigeminal area.

For pain in the neck beneath the angle of the jaw and below the sensory distribution of the trigeminal nerve, laminectomy with section of the upper three or four posterior cervical nerve roots is most effective. Rhizotomy of the posterior spinal roots for relief of pain is no new thing, since it was first practiced by Abbe[2] at Dana's suggestion in 1895, and again by Chipault[3] in the following year. Fay[4] applied this procedure to the problem of pain in the neck due either to a primary growth involving the glands in this area or, as is more commonly the case, to a metastatic involvement from malignancy of the face. With certain limitations, section of the upper cervical posterior roots affords complete relief. As may be seen from the diagrams, the anesthesia produced extends roughly from the vertex of the scalp down to the level of the

Fig. 6.—Anesthesia following rhizotomy of upper four cervical roots for pain in neck from malignant growth of parotid. Complete relief of pain for three months prior to death. Courtesy of Dr. H. K. Pancoast.

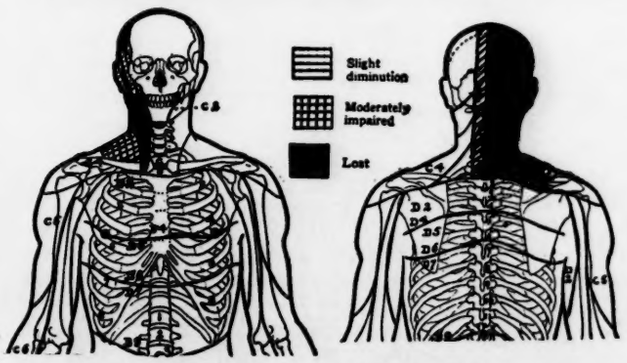

Fig. 7.—Anesthesia chart of patient shown in figure 6.

clavicle and the spine of the scapula. However, it will not relieve pain deep in the ear or in the throat.

High cervical laminectomy is a formidable surgical operation compared to other laminectomies or to avulsion of the sensory branches of the trigeminal. While I have carried through root section a number of times with happy results, I am not certain that the simpler procedure of section of the peripheral branches of the

2. Abbe, Robert: Intradural Section of the Spinal Nerves for Neuralgia, Boston M. & S. J. **135**: 329-335, 1896.

3. Chipault, A.: Intradural Resection of the Posterior Spinal Roots, Gaz. d. hôp. **68**: 937-943, 1897.

4. Fay, Temple: Cervical Rhizotomy for Pain in Carcinoma of the Neck, Surg. Gynec. Obst. **43**: 366-372 (Sept.) 1926.

cervical nerves where they wind forward over the sternomastoid muscle is not just as effective in producing the necessary anesthesia in many instances. In cases in which the malignant condition is extensive, involving the posterior as well as the anterior triangle of the neck, peripheral nerve section cannot be carried out because the incision will pass through cancerous tissue. Under such conditions, cervical rhizotomy is indicated. This procedure has been carried out on five patients. Two of these had had the lower divisions of the trigeminal nerves blocked previously with success, but the growth had spread into the neck. Four patients were completely relieved, surviving comfortably an average of four months. The fifth patient died free from pain in the hospital two weeks after the operation (table 2).

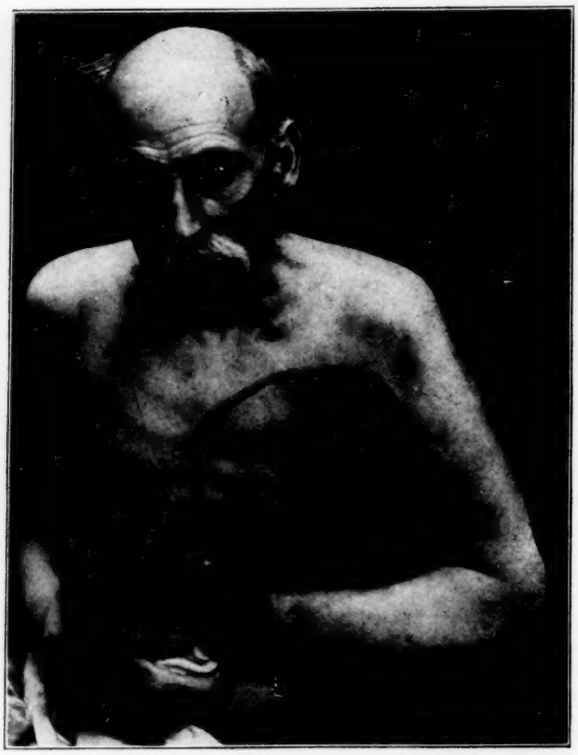

Fig. 8.—Patient with painful fungating carcinoma of left axilla and base of thumb. Rhizotomy of the posterior roots of the left sixth, seventh and eighth cervical and the first, second, third and fourth thoracic nerves resulted in complete relief of pain for three months before death. Courtesy of Dr. H. K. Pancoast.

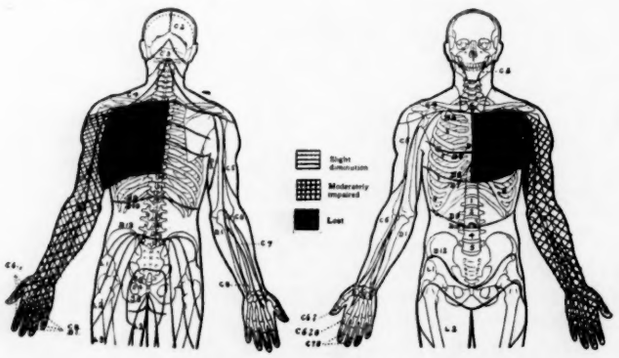

Fig. 9.—Anesthesia chart of patient shown in figure 8.

It should be reiterated here that neither fifth root section nor cervical rhizotomy will in any way affect pain deep in the ear or in the throat. The work of Doyle,[5] Adson,[6] Dandy[7] and Fay[8] seems to prove that section of the glossopharyngeal nerve will relieve the pain in the throat. From these reports and from my own limited experience, it is evident that intracranial rather than extracranial section of the glossopharyngeal nerve is to be preferred. But glossopharyngeal section does not alleviate the pain deep in the ear. This problem still remains to be solved. I have sectioned the vagus as suggested by Fay[8] and severed the cervical sympathetic chain extracranially without relief. Pain referred to the depths of the auditory canal is a common and distressing symptom of cancer of the face and neck. It is the only region which at present cannot

Fig. 10.—Patient with painful sloughing carcinoma of the chest wall. Marked relief followed rhizotomy of the posterior roots of the right fourth, fifth, sixth, seventh and eighth cervical and the first, second and third thoracic nerves. Death occurred ten weeks later.

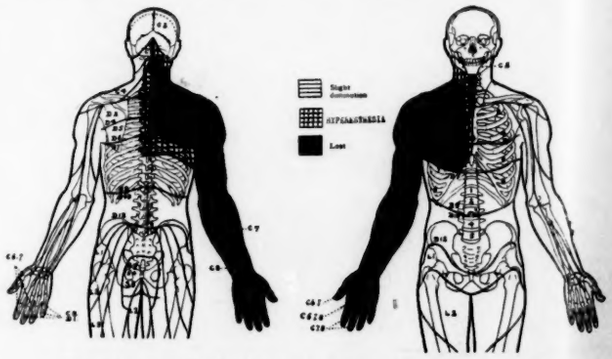

Fig. 11.—Anesthesia chart of patient shown in figure 10.

5. Doyle, J. B.: A Study of Four Cases of Glossopharyngeal Neuralgia, Arch. Neurol. & Psychiat. **9**: 34 (Jan.) 1923.
6. Adson, A. W.: Surgical Treatment of Glossopharyngeal Neuralgia, Arch. Neurol. & Psychiat. **12**: 487 (Nov.) 1924.
7. Dandy, W. E.: Glossopharyngeal Neuralgia (Tic Douloureux): Its Diagnosis and Treatment, Arch. Surg. **15**: 198-214 (Aug.) 1927.
8. Fay, Temple: Observations and Results from Intracranial Section of the Glossopharyngeus and Vagus Nerves in Man, J. Neurol. & Psychopath. **8**: 110 (Oct.) 1927.

be rendered insensitive by nerve section. If we can discover exactly which nerve or nerves to cut and work out a simple technic for carrying this through, much needless suffering can be avoided.

Since I had been successful in relieving the pain accompanying malignant lesions about the face and neck, it seemed logical to attempt the same procedure for painful lesions elsewhere in the body. Problems of this nature were presented by patients suffering from gastric crises and painful amputation stumps as well as cancer. Two methods of attack are available: posterior rhizotomy and chordotomy either unilateral or bilateral.

TABLE 2.—*Rhizotomy* *

No. of Patients	Roots Cut	Cause	Result
5	1st to 4th cervical	Malignant growth in neck	Pain relieved; morphine free
1	4th cervical to 4th thoracic	Malignant growth in breast	Pain relieved 75%; codeine required
1	6th cervical to 4th thoracic	Malignant growth in axilla	Pain relieved; morphine free
1	5th cervical to 1st thoracic	Painful amputation stump	Pain relieved; morphine free
1	4th to 8th thoracic	Tabetic crises	Pain not relieved
1	9th thoracic to 2d lumbar	Malignant growth in groin and penis	Pain 75% relieved; codeine required

* In ten patients complete relief was obtained in seven; partial relief in two, and none in one. There were no operative deaths in this series. All patients having a malignant growth died within ten months of operation.

Rhizotomy should be used in relatively localized lesions not involving more than four dermatomeres, and in all instances in which the pain field lies above the first thoracic segment. Owing to the overlap between the nerve supply of adjacent sensory segments, it is necessary to destroy the posterior roots running to the areas above and below the region involved. For a lesion causing pain in four dermatomeres, six posterior roots must be sectioned. It is always possible to expose six posterior roots by removing five laminae, which is about as much surgery as these patients will stand with safety.

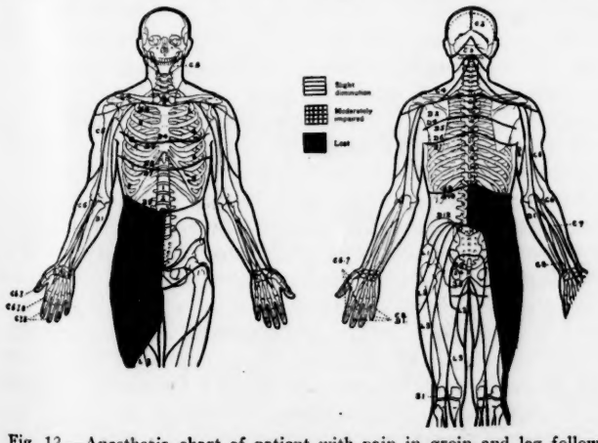

Fig. 12.—Anesthesia chart of patient with pain in groin and leg following carcinoma of the penis with inguinal metastasis. Rhizotomy of the posterior roots of the ninth, tenth, eleventh and twelfth dorsal and the first and second lumbar nerves was performed on the right side, with partial relief of pain.

Chordotomy, since its original proposal by Frazier and Spiller [9] has proved a very useful, safe, and easy method of alleviating intractable pain. The reports of Peet [10] and of Banzet and Robineau [11] confirm this opinion. Chordotomy is indicated for extensive bilateral or unilateral pain passing over nerve pathways entering the cord below the first thoracic segment. Frazier feels that chordotomy above this segment is unsafe, particularly if bilateral, because of possible involvement of the phrenic distribution. The point of election for severing the anterolateral columns is between the first and the fourth thoracic segments. The operation is less serious than rhizotomy, for the removal of only three laminae is necessary. The actual cutting of the cord can be performed in much less time than is required for rhizotomy, and if Frazier's technic is carefully followed the results are excellent. It is in widespread malignancy of the pelvis with deep-seated pain in this region or in the legs that chordotomy is especially indicated. I have used this operation in eight instances,

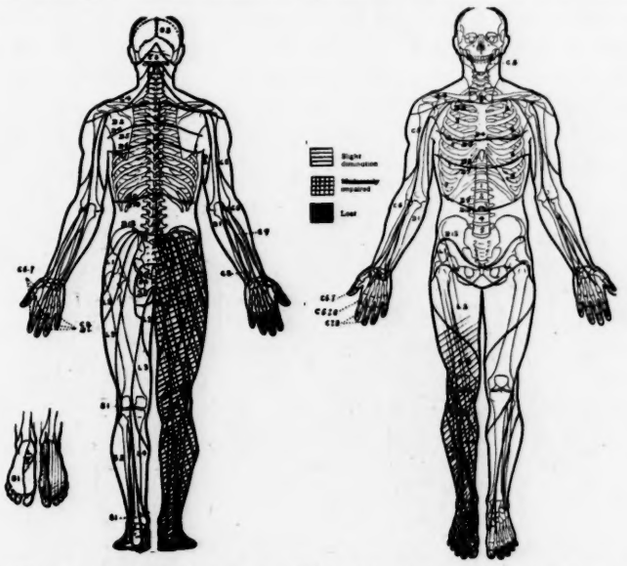

Fig. 13.—Anesthesia chart of patient having pain in right leg because of sarcoma of the sacrum. Chordotomy at the sixth dorsal segment was performed on the left with complete relief of pain.

TABLE 3.—*Chordotomy* *

No. of Patients	Level of Section	Cause	Result
4	4th thoracic, bilateral	Tabetic crises	4 pain free; one operative death; one patient alive 18 months, pain free; one died in 18 months and one in 6 months of intercurrent infection, free from pain
4	4th thoracic, unilateral	Malignant growth	2 pain free; 1 relieved, with recurrence of pain on opposite side; 1 operative death

* Two patients are alive and pain free eighteen and four months, respectively, after operation.

in four to relieve pain caused by cancer and in four cases of tabetic crises. Six of these patients were completely relieved (table 3).

These operative procedures for the relief of pain may seem too drastic. It may be asked, Why not give these hopeless patients enough morphine to keep them comfortable and let them die without the discomfort of further surgery? Frankly, this was my attitude before I had the opportunity of comparing patients who had been rendered pain free with those to whom morphine in increasing amount was being given. Allevia-

9. Frazier, C. H., and Spiller, W. G.: Section of the Anterolateral Columns of the Spinal Cord (Chordotomy), Arch. Neurol. & Psychiat. **9**: 1-21 (Jan.) 1923. Frazier, C. H.: Section of the Anterolateral Columns of the Spinal Cord for the Relief of Pain, ibid. **4**: 137-147 (Aug.) 1920.

10. Peet, M. M.: The Control of Intractable Pain in the Lumbar Region, Pelvis and Lower Extremities, Arch. Surg. **13**: 153-204 (Aug.) 1926.

11. Banzet, P., and Robineau, J.: Section of Anterolateral Segment of Spinal Cord, J. de chir. **30**: 129-140 (Aug.) 1927.

tion of pain by morphine is at best only intermittent. In the intervals between hypodermic injections the distress may be extreme. These operations carry a distinct mortality, which is rather low, however, when the physical make-up of the patients is considered. But if death occurs, it comes peacefully under an anesthetic without prolonged suffering. Furthermore, in the advanced cases the expectation of life is not long at best. All that can be claimed for nerve section for the relief of pain is that it is an act of mercy, an alternative to a slow exitus, with the patient drugged by morphine and hoping that death will come speedily. If we realize that relief may be afforded these unfortunate patients by having them submit to a few days of postoperative discomfort, we can suggest nerve section

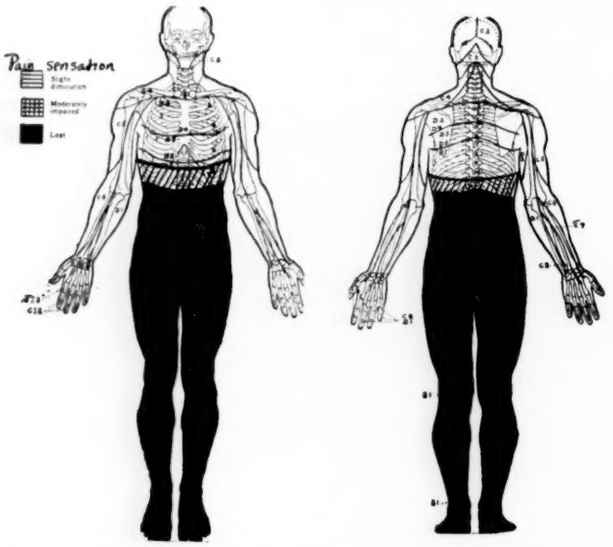

Fig. 14.—Anesthesia chart of patient with pain from tabetic crises. Bilateral chordotomy was done at the fourth dorsal segment, with complete relief of pain for two years.

before their condition becomes too far advanced to preclude any possibility of successful surgery. If they accept it, well and good; if they refuse, we can feel that we have left nothing undone and can resort to morphine and other anodynes with a clearer conscience.

133 South Thirty-Sixth Street.

ABSTRACT OF DISCUSSION

DR. LEWIS J. POLLOCK, Chicago: I should like to ask Dr. Grant whether he has any ideas concerning the possible existence of an antidromic pain fiber in the anterior roots.

DR. GRANT: I am unable to answer that question. These patients have been examined carefully and the examination checked up well afterward, but we have not found any suggestive indication so far. As to whether the condition takes a long time to develop, in some, particularly in rhizotomy and chordotomy, the patients have not lived long enough for the condition to develop.

DR. POLLOCK: I am referring particularly to the failures of rhizotomy to relieve pain. The explanation given is that the existence of an antidromic pain fiber running in the anterior root necessitates, in some cases, resection of the posterior and anterior root to relieve pain such, for example, as that occurring in tabetic crises.

DR. FRANCIS C. GRANT, Philadelphia: Those cases in which we failed to relieve the pain permanently fall into three groups: First and most important are those in which two types of pain were present. There was the major pain about which the complaint was most definite, and a secondary, underlying, minor pain, masked by the other and in the beginning causing but little distress. The major pain was relieved by nerve section and for a while the result was very satisfactory. Then the secondary pain made itself manifest and because it was constant, it gradually became as annoying as the primary pain had been. This secondary pain almost always developed in areas adjacent to the site of the primary pain. It often required further operative procedures for its relief. In the second group are those cases in which the malignant condition spread rapidly and by involving adjacent nerve areas caused a recrudescence of pain. For example, in a case in which a unilateral chordotomy was performed for right sided abdominal pain from a retroperitoneal growth, within a month following operation the pain reappeared on the left side. In the third group are the cases in which either the attempt at nerve block was unsuccessful or the anesthesia produced by nerve section failed to include the site of the pain. All these factors should be taken into account, and the possibilities of failure carefully explained. It is unfair to these patients to promise them certain and complete relief. It is my policy simply to outline the situation to these sufferers, in no instance insisting on operation but letting them decide as much as possible for themselves. With regard to Dr. Fay's work, I consider it of great potential importance. If, by section of the communicating branches between the vagus and the superior cervical sympathetic chain, he can relieve the pain deep in the ear, a frequent and very distressing symptom of malignant conditions about the face and neck, he has solved a hitherto baffling problem. While this procedure failed in its results in the only case in which it was attempted, nevertheless, I am sure that this means of relief should be given a further trial.

MALUNITED FRACTURES AND UNREDUCED DISLOCATIONS ABOUT THE ELBOW*

WILLIS C. CAMPBELL, M.D.
MEMPHIS, TENN.

Fractures about the elbow more frequently cause permanent disability with a greater degree of impairment in function than do those of any other joint. In a large measure this is due to improper and inefficient treatment; but, even after the most careful and intelligent management by expert surgeons, permanent disability is not uncommon.

Such poor results are common in the elbow because of its complicated mechanical arrangement and function. The elbow is in reality a double joint having two distinct articulations and performing two separate motions. The joint surfaces are intricately fashioned and closely coaptated; therefore, minor disturbances in their relationship may seriously impair function.

Injuries to the cartilaginous surfaces are much more frequently present than is demonstrated by the roentgenogram. In consequence, traumatic arthritis is a frequent complication and often seriously impairs an otherwise excellent result.

Incident injury to the periarticular structures, such as the muscles, tendons, nerves and periosteum, often causes tardy convalescence and not infrequently permanent impairment of function.

The operative procedure must be devised to meet the individual requirements of each case, but there are certain underlying general principles that may be followed. In general, the purposes of the various reconstructive operations should be:

1. Reconstruction of the normal contour and alinement of the elbow joint with especial reference to the carrying angle.
2. An increased or normal motion. This is desirable, but stability and efficient function should not be sacrificed for the mere restoration of motion.

* Read before the Section on Orthopedic Surgery at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

3. Preservation of the condyles with their articular surfaces when possible and the securing of union between the detached condyles and the shaft in as nearly the normal relationship as possible.

4. Union and proper alinement, in T fractures, between the condyles themselves and between the condyles and the shaft.

5. Excision of bony blocks or bridges that retard or prevent full motion. When the disability is due to an excess formation of callus or to a myositis ossificans, no operation should be attempted until ossification is complete.

In adults in whom there is extensive destruction of the joint, either with or without ankylosis, an arthroplasty is the procedure of choice. Arthroplasties should not be attempted in children during the period of bone growth.

FRACTURES OF THE CONDYLES

Fractures of the condyles may involve either the internal or the external condyle alone, or there may be a T fracture with displacement of both the condyles. The internal epicondyle may be detached and displaced by direct muscle pull.

The strong flexor muscles of the forearm are attached to the internal condyle. The detached fragment usually includes all or part of the area to which these muscles are attached as well as a portion of the articular surface of the trochlea. The fragment is displaced and rotated on itself by the pull of the flexor muscle; and this displacement, with the resultant formation of callus, causes a marked limitation of flexion and extension.

The more common type of fracture is that of the external condyle, carrying with it the capitellum. It is the result of direct force on the capitellum transmitted from the hand through the radius. The extensor muscles of the forearm pull the fragment out of position and result in an upward displacement and nonunion of the external condyle. It is obviously impossible to discuss here all the various types of fractures that may occur about the elbow; consequently this paper is limited chiefly to a consideration of those involving the lower extremity of the humerus. Fractures of the head of the radius and the ulna are not included. The conclusions are drawn from a study of approximately seventy-five reconstruction operations. Illustrative cases were chosen from each group for discussion.

The most common type of fracture about the elbow in children is the supracondylar fracture. Treatment of this type of fracture is in general very well carried out and the relative proportion of subsequent disability is not high. A much higher percentage of disability follows fractures of the condyles proper, particularly the external condyle, which is much more frequently injured. These fractures usually occur in childhood, and as growth progresses there develops a deficiency in growth of the external side of the joint or a relative overgrowth of the inner condyle. This produces a cubitus valgus of varying degree, often so marked that the trochlear articular surface faces outward. The elbow joint is unstable for hard use. Motion is usually not materially affected, but undue exercise is accompanied by pain.

Delayed ulnar palsy is a common complication. The first symptoms usually appear during young adult life from the sixteenth to the thirtieth year. Ulnar palsy develops insidiously, and unless careful inquiry regarding it is made it is usually overlooked in the early stages. The condition is the result of the increased angle around which the ulnar nerve must pass when the forearm is in valgus. When the arm is flexed, the portion of the nerve lying in the ulnar groove is repeatedly traumatized, producing a gradual thickening and fibrosis of the nerve at this point. Tingling and numbness in the ring and little fingers are the first symptoms noted, and this is followed by an atrophy of the intrinsic muscles of the hand supplied by the ulnar nerve. Later, a contracture of the ring and little fingers often develops.

A typical myositis ossificans may develop in the soft tissues adjacent to the fracture. This is usually seen in the substance of the brachialis anticus following supracondylar fractures and may cause a definite block in both flexion and extension. Myositis ossificans must be clearly differentiated from the excess formation of callus which is so common in supracondylar fractures. In the case here described as myositis ossificans, the bony mass was in the substance of the muscle entirely separate from the site of fracture.

Excess formation of callus is quite common about the elbow and may at times form bony bridges completely across the joint, fusing the radius or ulna to the humerus and completely blocking the joint. Stripping up of the periosteum from the lower end of the humerus by the force of the fracture is often responsible for this excess production of callus.

TREATMENT

In the acute stage some of these fractures about the lower end of the humerus can be reduced by the closed method, but the majority, with the exception of supracondylar fractures, will require an open operation. With the fracture exposed, the fragments can be satisfactorily replaced in their normal relations and the position maintained by wire nails or bone screws, a perfect result being obtained. Comminution, of course, makes the result much less certain. If a good reduction is not secured serious impairment of function may result.

Fractures of the Internal Condyle.—Avulsion of the internal epicondyle with reattachment at a lower level on the humerus is occasionally seen. It usually does not result in severe disability unless it is caught within the joint. There was one case in this series in which the medial epicondyle had become caught between the trochlea and the articular surface of the ulna, causing a complete block of the joint. The joint was exposed, and the epicondyle with its attached muscles was removed and replaced on the internal condyle. A perfect functional joint was obtained.

Fractures of the internal condyle including all or part of the articular surface of the trochlea are usually associated with severe trauma and comminution of the major portion of the joint, on which motion and stability depend. In untreated cases, bony ankylosis or such other serious impairment results that an arthroplasty usually offers the best chance for a movable elbow. Rarely one sees the internal condyle with a portion of the trochlea cleanly chipped off. When the condition is seen early, the condyle can be replaced and fixed in position, and an excellent result obtained.

Fractures of the External Condyle.—In fractures of the external condyle in children, it is essential to retain the detached fragment and restore it to its normal location because of the future influence on the growth and development of the elbow joint. The fragment usually includes the capitellum and the epiphyseal area above it. Removal of this area means the loss of not only the articulation for the head of the radius but also the growth center for the radial side of the joint. This necessarily produces a shortening of the lateral side with a cubitus valgus which relatively increases with the growth of the medial condyle.

Replacement of the condyle can usually be accomplished in less than a year if there has not been too much injury to the capitellum or too much distortion of the bony architecture of the joint by overgrowth of the medial condyle. The following case shows the ideal procedure in fractures of this type.

CASE 1.—A boy, aged 7, sustained a fracture of the external condyle six months before I saw him. The fragment contained part of the trochlea and the entire capitellum. The lateral condyle was displaced upward and ununited. There was from 90 to 120 degrees of flexion. The joint was exposed through a lateral incision, the scar tissue was removed, the fragment was mobilized and the fractured surfaces were freshened. The condyle was then replaced in its normal position, where it was fixed by an autogenous bone peg from the tibia. There was complete restoration of function at the end of six months.

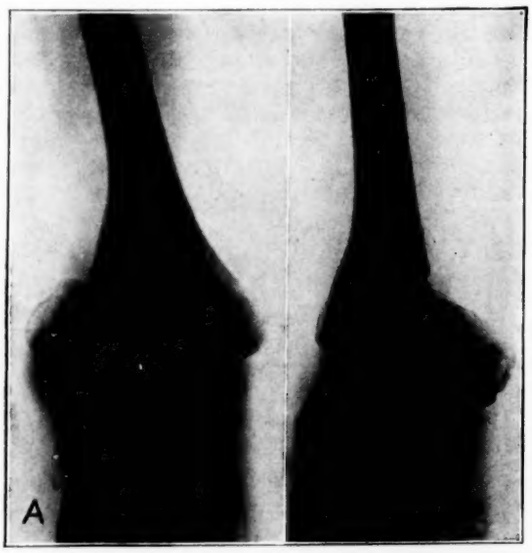

Fig. 1 (case 1).—*A*, ancient fracture of external condyle with nonunion and cubitus valgus deformity; *B*, postoperative aspect, showing removal of detached external condyle with correction of valgus deformity by wedge shaped osteotomy just above the internal condyle. Fragment held in position by autogenous bone pegs.

When proper replacement and fixation of the detached external condyle is not secured in the acute stage of the fracture, nonunion and distortion of the joint frequently result. Simple removal of this detached fragment in later years has generally been found to be unsatisfactory as it does not give a sufficiently broad articulation to support the head of the radius and prevent a further increase in the valgus deformity. During the period of bone growth, every effort should be made to retain the support of this condyle by securing its union to the shaft. Occasionally, when enough of the external condyle remains attached to give partial support to the radius, and when the detached portion interferes with the motion of the joint, it may be removed.

In adults, more liberties may be taken in the reconstruction of the joint as the problem of future growth does not have to be considered. When the fracture has existed since childhood, as is often the case, the detached condyle is often in such a condition that it would not be suitable for use in the future joint even if the architecture of the joint permitted its approximate replacement.

The usual deformity here is a marked prominence of the internal condyle with cubitus valgus, a joint which is somewhat unstable and painful, and blocked more or less by the detached external condyle, which can be felt as a bony mass lying just above and anterior to the head of the radius. The problem here is to restore the contour and alinement of the joint by shortening or raising the level of the internal condyle and at the same time shifting the position of its articular surface so that it faces in the proper direction for a straight forearm. This might be accomplished by a hemiarthroplasty, enough of the internal condyle being removed to secure the desired position, but this would entail the loss of a normal trochlear articulation, which is extremely valuable in maintaining a strong, stable elbow.

The more preferable procedure is to do a wedge shaped osteotomy through the expanded inner portion of the humerus just above the internal condyle, removing enough bone to swing the whole trochlear articulation inward to the desired position. The position is secured by driving bone pegs through the internal condyle into the shaft of the humerus. The detached external condyle is completely removed. This procedure was described in case 1 (fig. 1).

It occasionally happens that the detached condyle and its radial articulation appear to be so nearly normal except for the nonunion and upward displacement that it is desirable to retain it in the formation of the new joint. The relative lengthening of the internal condyle must be corrected and we must be assured of obtaining union between the detached external condyle and the shaft, and of maintaining the proper position of the external condyle while this union is taking place. The following instance of a fracture of the external condyle of long duration with malunion (fig. 2) is an interesting example of such a type of reconstruction:

CASE 2.—A woman, aged 28, had sustained a fracture of the external condyle in childhood, resulting in a nonunion with valgus deformity of the elbow. The condyle was well preserved and the articular surface of the radius was intact. The elbow was exposed by a posterior incision; the edges of the detached fragment were freshened; a bed was prepared for it on the shaft of the humerus and the fragment was held in this position by an autogenous bone peg across the condyles. In order to assure union with the shaft, an osteoperiosteal graft was placed on the posterior surface of the humerus and over the external condyle. The trochlea surface of the joint was remodeled after the method of a hemiarthroplasty. Solid union of the external condyle was secured with a good functional elbow.

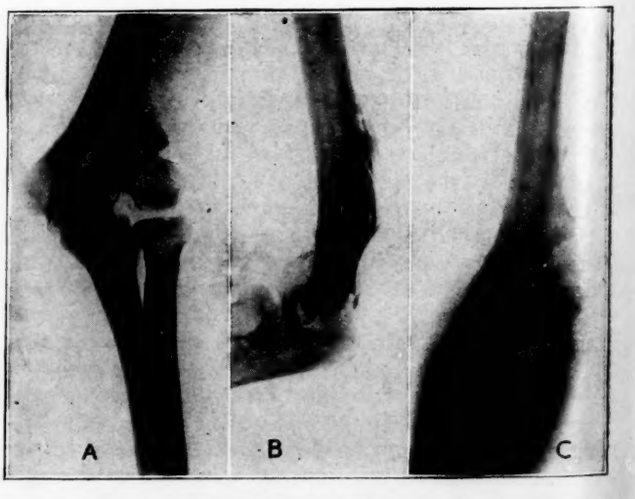

Fig. 2 (case 2).—*A*, old malunited fracture of external condyle with radial articulation well preserved; *B* and *C*, postoperative aspect showing condyle fixed back in position with autogenous bone peg reinforced by osteoperiosteal graft.

As has been previously stated, delayed ulnar palsy is a frequent complication in fractures of the external condyle with valgus deformity. Transplantation of the nerve from the ulnar groove to the flexor surface of the elbow usually relieves the condition. After the fibrosis and degeneration are well advanced, it often requires months or years for regeneration to take place. The nerve should be transplanted even if the valgus is corrected by operation.

Excess callus, blocking the motion of the joint or bony bridges extending across it, must be removed. No

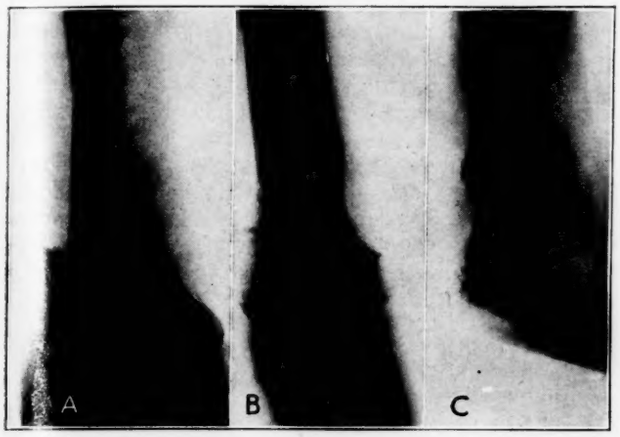

Fig. 3 (case 3).—*A*, T fracture of lower end of humerus with separation of fragments; *B* and *C*, postoperative view showing fragments realined and held together with bone peg. The normal relation of the elbow has been restored, and there has been solid union between condyles and between condyles and shaft with excellent functional result.

operation for the removal of this excess bone should be attempted until the process of callus formation has ceased and the ossification of the callus is complete. Operations performed during the formative period are very apt to be followed by a recurrence.

In myositis ossificans, an exactly similar condition exists. When the activity of the process has been arrested and the contraction of the callus begins, a characteristic appearance may often be noted in the roentgenogram. The density of the outer layer is increased, making a heavier shadow in the picture and giving the appearance of a shell about the mass.

Reconstruction of T Fractures.—These fractures of the humeral condyles are perhaps the most difficult type of fractures about the elbow to treat, either in the acute stage or after malunion has taken place. There is often so much injury to the bony structures about the joint that callus formation and adhesions make ankylosis probable, even if the fragments are satisfactorily approximated. Comminution of the condylar fragments adds to the difficulty of reduction and the probability of ankylosis. There are many cases, however, in which the condyles, even though badly displaced, are split cleanly apart without comminution or crushing of the joint surfaces. When these are seen before ankylosis has occurred, a reconstruction of the lower end of the humerus with restoration of the normal relations between the fragments offers an excellent chance for a movable joint with good anatomic alinement. Case 3 is an example of what may be accomplished in such fractures (fig. 3).

CASE 3.—A man, aged 30, had sustained a T fracture one month prior to examination in which the humerus was broken across transversely 2 inches above the elbow and the shaft was displaced forward. The condyles were cleanly broken apart with wide separation and displacement of the fragments. The lower end of the humerus was exposed and the partial union broken up. The condyles were first replaced in their normal relations and fixed together with a fresh autogenous bone peg from the tibia. The shaft was next alined with the upper end of the reconstructed condyles. Stability was so good that no type of internal fixation was necessary and the position was maintained by immobilization in a plaster cast. In many cases a secondary intramedullary peg between the condyles and shaft is necessary. Six months after the operation there was 50 degrees of motion, which is increasing.

Even if ankylosis should result, the operation is justified by the improved position of the fragments, which is a necessary step for a successful arthroplasty.

When the condyles are comminuted, the major fragments should be replaced and fixed together to restore as nearly as possible the contour of the lower end of the humerus, because one must plan to utilize the remains of these condyles in the making of the new joint. The transverse fracture of the shaft is usually at such a high level that it does not provide sufficient width for the bearing surface of an arthroplasty. If the joint is to be left stiff, the improved position is a material gain.

Supracondylar Fractures.—Malunion of supracondylar fractures is usually of three types. The first and most common is that in which the lateral alinement is good and there is simply a backward displacement of the lower fragment with the lower end of the shaft projecting forward in the antecubital space. The disability in these elbows consists of an inability to flex the joint beyond a right angle and a limitation in extension at about 135 degrees.

The limitation of motion is due to a blocking of the joint by the projecting end of the upper fragment. When solid union has occurred with the condyles displaced backward and the lateral alinement is good, it is

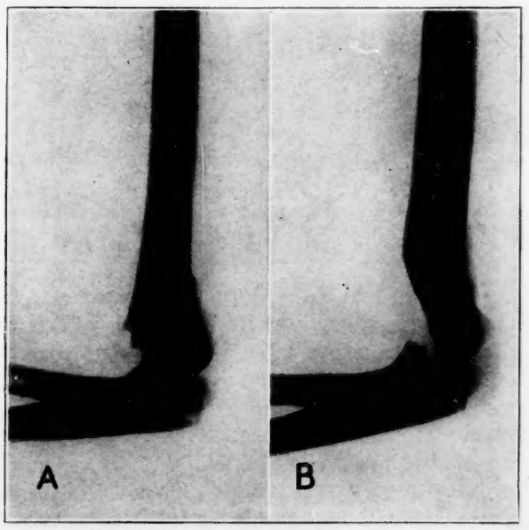

Fig. 4 (case 4).—*A*, old supracondylar fracture united with backward displacement of the condyles and forward projection of shaft; lateral alinement good. *B*, postoperative view showing removal of projecting fragment with practically normal range of motion.

unnecessary and inadvisable to break up this union because an excellent functional elbow can be secured by simply removing the projecting portion of the shaft. In early childhood the slight backward angulation will often eventually correct itself completely, restoring the anatomic relations of the joint.

The projecting fragment is exposed by a small lateral incision and is chiseled off with the callus. No form

of immobilization is necessary and motion is started as soon as the operative reaction subsides (fig. 4).

The second type of malunion is that in which there is both a backward and lateral displacement of the lower fragment, usually accompanied by a certain amount of rotation of the lower fragment on the shaft of the humerus.

The disability and deformity in these cases is severe. The condyles are usually displaced toward the medial side, with the internal condyle rotated posteriorly. The lower end of the shaft projects forward. There is a cubitus varus, loss of the carrying angle, and only a few degrees of motion in the joint. In this condition nothing short of an osteotomy through the original point of fracture and a proper reduction and replacement of the fragments will restore function in the joint.

Because of the postoperative swelling it is usually inadvisable to put the arm up in acute flexion to maintain the position; hence there is often a tendency for a recurrence of the original deformity, and if this appears probable it is better to use some type of internal fixation, such as a bone peg, to hold the fragments in position (fig. 5).

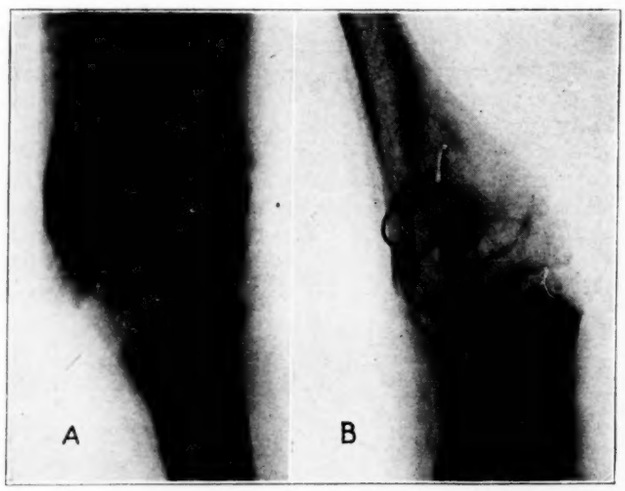

Fig. 5 (case 5).—*A*, old supracondylar fracture of humerus with medial displacement of condylar fragment and loss of carrying angle; *B*, postoperative result showing correction of lateral deformity by osteotomy through the site of the old fracture; excellent functional result.

In one case in which the deformity recurred, a closed manipulation was done just as would be carried out in an acute fracture, and a satisfactory position secured.

The third type is a forward displacement of the lower or condylar fragment, usually associated with some rotation and medial displacement and with loss of the carrying angle.

The deformity is corrected by an osteotomy through the site of the old fracture, and the position is maintained by application of a cast with the elbow at a right angle while backward pressure is maintained on the forearm, the upper fragment of the humerus being used as a fulcrum.

Ancient Posterior Dislocations.—Acute posterior dislocations of the elbow offer little difficulty in reduction; but when the condition has been allowed to persist for three weeks or longer the problem has entirely changed. When the patient is seen as early as the third week, it is a great temptation to try a closed manipulation and, if this does not succeed, to do an open reduction later. Such a plan is fraught with grave danger and almost always results in disaster.

Contractures of the soft parts, the organization of scar tissue and the formation of adhesions about the joint make attempts at closed reduction in this early stage inadvisable. In the first place a closed reduction is usually impossible to accomplish and, if it is occasionally successful, so much injury is done to the articular surfaces of the joint by the strenuous manipulation that ankylosis is almost certain to follow. In the cases in which closed reduction has failed, the crushing of the joint surfaces precludes the possibility of a successful open reduction. Atrophy and softening of the humeral condyles proceeds rapidly, and they soon become much less resistant than the adhesions and contracted soft parts. Attempts at reduction practically always result in a crushing or fracture of the humeral condyles before the soft parts can be loosened sufficiently to reduce the dislocation.

The results from open reduction under two months have been very satisfactory, particularly in children. After this an occasional good result with a movable elbow will be obtained, but most of the patients have had a serious limitation of motion or complete ankylosis.

OPERATIVE TECHNIC

An incision is made over the posterior surface of the elbow, beginning in the midline about 4 inches above the tip of the olecranon and extending down to just above the tip of the olecranon, where it turns slightly outward over the center of the external condyle of the humerus and the head of the radius for about 2 inches on the forearm. Skin flaps are dissected back, completely exposing the tendinous insertion of the triceps muscle and the posterior surface of the elbow joint. The ulnar nerve is next located, dissected up from its bed along the groove in the internal condyle, and retracted out of danger. The tendon of the triceps muscle is dissected out from its upper end and turned down, and left attached to the olecranon. An incision is next made directly in the midline, through the fibers of the triceps muscles down to the humerus, extending from 3 inches up the shaft down to the reflection of the joint capsule around the articular surfaces. Subperiosteally, all of the muscular attachments over the lower end of the humerus, both anteriorly and posteriorly, are stripped free with a periosteal elevator. When the attachment of the joint capsule around the condyles of the humerus is reached, it is necessary to divide this with the knife or with scissors. Some difficulty may be encountered in freeing the tissues around the internal condyle and along the anterior surface of the humerus just above the joint, but it is essential that they all be loosened and that the lower end of the humerus be completely mobilized. This difficulty will be greatly lessened if the incision has previously been extended down over the radius, exposing the head and a small portion of the shaft. Considerable callus is often formed over the posterior surface of the humerus around the olecranon fossa, as a result of the stripping up of the periosteum at the original injury. This callus, with the scar tissue in the olecranon fossa and incisura semilunaris, is next thoroughly removed.

When the lower end of the humerus has been completely mobilized and the capitellum and head of the radius have been exposed, one is ready to carry out the first step in the reduction. Simply twisting the forearm with gentle pressure over the capitellum causes the head of the radius to glide forward over the capitellum into the normal position. If this is not easily accomplished, it is a great temptation to skid the capitel-

lum forcibly backward with a periosteal elevator. Enough force should not be used to injure the capitellum, as a little more dissection will render force unnecessary. After the radius is reduced, it is an easy matter to slip the coronoid process forward over the trochlea and complete the reduction. The joint is then carried through the full range of motion to ascertain that there is no obstruction. The periosteum and muscles are next closed along the posterior surface of the humerus; the fascia is closed over the head of the radius, and the tendon of the triceps muscle is sutured back into its normal position. The arm is placed in a posterior splint and the elbow flexed at a right angle.

Anterior dislocations of the head of the radius without fracture are rare but are occasionally encountered. Closed reductions are unsatisfactory because the orbicular ligament is usually ruptured and the strong pull of the biceps tendon makes it difficult to hold the head in its proper position. Several operations have been described, such as repair of the orbicular ligament or reinforcement of this ligament by adjacent flaps of fascia. None of these have been particularly successful. A procedure that I have carried out in a limited number of cases and have found satisfactory is as follows:

The head of the radius is exposed in the usual manner down to the biceptal tubercle. A strip of fascia lata is placed around the shaft of the radius just below

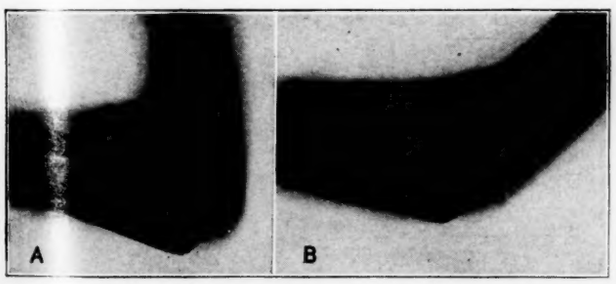

Fig. 6 (case 6).—*A*, anterior dislocation of head of radius without fracture; *B*, postoperative result one year later showing radius retained in normal position; perfect functional result.

the head and passed through a drill hole in the adjacent portion of the ulna. This drill hole is so placed that when the fascial band is drawn taut the pull is slightly posterior; the head of the radius is then reduced, the fascial band is tied and sutured, and the orbicular ligament is repaired. Figure 6 shows the result one year after operation.

ARTHROPLASTIES

An arthroplasty is often the only procedure that offers hope for the reestablishment of motion and function in an elbow severely injured by fractures about the elbow joint. It is indicated in those cases in which there has been so much destruction of the joint that the other types of reconstruction are not suitable and in all cases of ankylosis in which a reasonably good contour of the humeral condyles has been preserved. In old posterior dislocations with or without fractures of the articular surfaces and ankylosis, arthroplasty is the operation of choice.

The indications apply only to adults. It is felt that an arthroplasty is rarely ever advisable in a child in whom the question of future growth must be considered.

In children in whom there is fibrous or bony ankylosis of the elbow in any reasonably good functional position, it is better to leave the joint alone until the bones have reached their full growth.

In order for an arthroplasty of the elbow to be successful, sufficient bone must be removed to give a good wide space and to allow thorough remodeling of the articular surface of the humerus. If this is done during the period of bone growth, portions of the epiphysis must be sacrificed or so badly injured that subsequent disturbance of growth will follow.

If the elbow is ankylosed in full extension or in such extreme angulation that further disturbance of growth is possible, a compromise arthroplasty can be done for the restoration of a functional position but not for the purpose of obtaining motion.

CONCLUSION

When a poor result has been obtained in fractures about the elbow, it has generally been the custom both for the laity and for the average practitioner treating fractures to accept a disability which is often serious as inevitable and permanent because the possibility of securing relief is not generally recognized. In practically all cases a material improvement in function can be obtained by one of the various types of reconstruction operation and often the joint can be restored to a practically normal condition. It is with the hope of bringing about a more widespread knowledge of what can be accomplished in the treatment of these disabling injuries that this paper has been presented.

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ABSTRACT OF DISCUSSION

DR. M. S. HENDERSON, Rochester, Minn.: At the first setting of a fracture of the elbow nothing short of perfect apposition and reposition of the fragments should be aimed at, and any departure from that should be allowed only for very good reasons. If satisfactory position cannot be obtained by manipulation, an open operation should be performed. If an open operation is to be performed, it should be done early, and the earlier the better. If the deformity has existed for some months and callus has formed and can be seen in the roentgenogram, it may be better to defer operative procedure until the callus has become solidified, and then to do an arthroplasty, if necessary. A fracture of the external condyle, when the external condyle is knocked upward and sits up in front of the joint, looking forward instead of downward, is often particularly intractable and may lead to serious disability. The patient cannot flex his arm and cannot pronate or supinate. If seen early, the fragment can be replaced and held by a beef bone screw (which I prefer), or nails, or autogenous bone graft. I saw such a case recently in a young woman who weighed 260 pounds (118 Kg.) about six months after the injury. The arm was very large and I found that it was impossible to replace the condyle and had to remove it. Removal of the external condyle leads to some instability of the joint, but in the late cases it is better to remove it and let the patient take the chance of having an unstable arm and perhaps late ulnar palsy than to leave it in with the lack of motion.

DR. E. W. RYERSON, Chicago: Fractures around the elbow joint are among the very easiest in which to obtain satisfactory results without open operation, but many general medical practitioners see these fractures too late, when an enormous amount of swelling has occurred, and they are perhaps unwisely deterred from any attempt at actual reduction. In most cases, even though the swelling is extreme, it is possible to get a perfectly satisfactory reposition by manipulative measures. A great many physicians, however, do not know the value of the various standardized methods of reducing elbow fractures, so that we who do orthopedic work and bone work will continue to see a large number of these malunited fractures. As Dr. Campbell has said, most of the latter cases require open operation. They require as nearly as possible an accurate remodeling of the joint by whatever means one cares to use. If

the position cannot be sufficiently acquired for a perfect result, his suggestion of leaving a large broad block of bone on the lower end of the humerus is a very valuable one, because with a broad piece of bone at the lower end one can almost invariably perform a highly successful arthroplasty, so that the patient will be assured of a reasonably good result. In the earlier cases, those seen within four, five or six weeks, it is perfectly practicable in almost every case to get a good replacement, and this usually has to be held. We do not like, after an open operation, to put the arm up into very acute flexion. I think that most of us are a little afraid of ischemic paralysis, and would rather resort to some form of internal fixation. The elbow joint and the ankle are the least objectionable places in the human skeleton in which to use foreign materials. Ordinary steel wire nails are very useful and harmless in these two places. I have used them many times. I am as strong an advocate as is Dr. Albee of the autogenous graft for various purposes. In young people with good osteogenic possibilities there is no need for the complicated use of the autogenous bone pegs. Magnuson, years ago, developed a very useful ivory peg, which can be bought at the instrument stores and which is much stronger than the autogenous pegs or beef bone pegs. I have used these with great satisfaction. The encircling wires, one of which I saw in one of the pictures, are not so often needed in these cases. I think that almost all the fractures can be held with either wire nails or ivory pegs. The small beef bone pegs and screws are also very useful, and some put threads on the screws in order to hold the position better. Most of the fractures around the elbow can be successfully treated with wire nails or ivory pegs.

BLADDER DYSFUNCTION FOLLOWING PROSTATIC ABSCESS *

R. E. CUMMING, M.D.
DETROIT

Urinary incontinence associated with a large bladder residual, cystitis, and consequent renal back pressure admits of a number of presumptive explanatory diagnoses. The case here submitted is of unusual interest and illustrates diagnostic errors one should obviously try to avoid. I shall give in outline the reports of two surgeons in whose care the patient had been prior to my own attendance, since they furnished invaluable data relative to my examination. The reports were given directly to me; the need for such cooperation, on the part of family physicians, and specialists as well, is too often apparent, but lack of it leads to prolonged discomfort and disadvantages for many patients. Obviously, in this paper I do not intend any disparagement of those who formerly attended the patient. One should bear in mind the facts relative to roentgen treatments given before the formation of the prostatic abscess; their relation to it is conjectural but suggests a preparatory stimulus for the invasion of pyogenic organisms.

REPORT OF CASE

As stated in the report of a surgeon's examination and care in June, 1925, a man, aged 60, was brought into the hospital on account of retention of urine, epididymitis, chills and fever.

General examination revealed that the blood pressure was 132 systolic and 84 diastolic. The right knee jerk was absent; the left was normal. The blood Wassermann reaction was negative. Local examination showed that the left epididymitis was subsiding. The prostate was not enlarged but was very soft. A catheter was passed and 24 ounces (700 cc.) of cloudy, infected urine was found in the bladder. The urine showed pus and albumin. Cystoscopy was unsuccessful; the operator could not be sure that the instrument entered the bladder. A cystogram showed an irregular outline and a diverticulitis. One week later cystoscopy was successful. There were marked trabeculations. The right ureteral orifice was gaping. There was a diverticulum in the vault. There was an early anterior notching in the region of the prostate and a slight bulging of the median lobe. Rectal examination with the instrument in place showed a slight diffuse enlargement of the prostate, which was soft. It was uncertain whether the prostate was causing the primary symptoms. The neurologic examination was negative.

Treatment consisted of drainage of the bladder by an inlying catheter. The patient improved. He returned six weeks later wearing a urinal, with marked incontinence and 5 ounces (150 cc.) of residual urine. He was catheterized and given a bladder instillation of mercurochrome-220 soluble. Following this, cloudy urine was noted oozing from the urethra which was not stained by mercurochrome. (Author's note: This phenomenon might have made one suspect extravesical retention of urine.)

A second surgeon's report noted that prior to the foregoing examination and care (time uncertain), the patient had consulted a physician who had diagnosed and treated by x-rays "an enlarged prostate." After several x-ray treatments, which were supplemented by massage, the patient suffered extreme discomfort for several days and was relieved by the spontaneous discharge of a large amount of pus from the urethra, the drainage lasting indefinitely. At the time of examination by the second surgeon, in October, 1925, the patient found it necessary to wear a urinal at all times. There was a chronic left epididymitis.

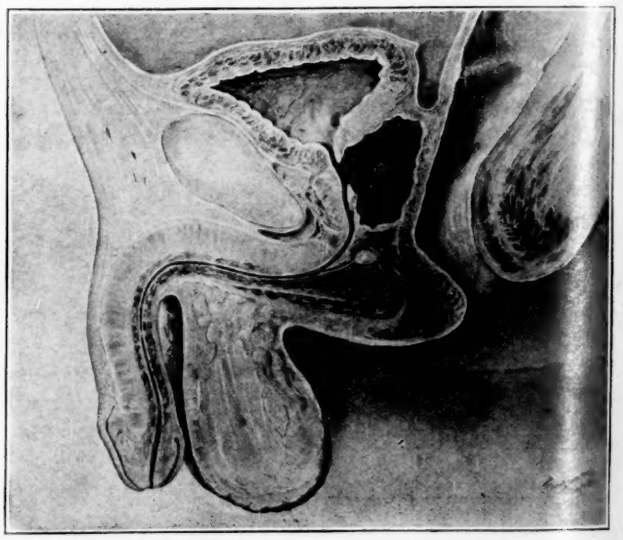

Fig. 1.—Anatomic relationships of extravesical cavity. Attention is called to its position in the prostatic area.

Examination of the genito-urinary tract revealed softness of the prostate by rectum within normal range. The right vesicle was hard but did not suggest carcinoma. The left vesicle was normal. Cystoscopy showed residual urine of 8 ounces (240 cc.). The capacity of the bladder was 500 cc. There were fine trabeculations throughout, suggesting nerve lesion. Ureteral orifices were not seen because of the projection of the midlobe of the prostate. The lateral lobes were not encroaching. The diagnosis was median lobe prostatic enlargement with impairment of the action of the prostatic urethra.

The patient was first seen by me, Sept. 4, 1926, having been admitted to Grace Hospital with severe hematuria, constant bleeding with incontinence of urine, pain from clots, fever and prostration. The hematuria was of one day's duration.

Examination revealed a distended bladder, in spite of incontinence. In the prostate area, as examined rectally, there were no normal glandular landmarks, but a moderate sized boggy mass was felt. A large, soft rubber catheter was inserted into the bladder and 12 ounces (360 cc.) of bloody, foul-smelling

* Read before the Section on Urology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

urine was obtained. The bladder was irrigated and the catheter left in place. There was no further bleeding except a slight ooze around the catheter. The patient's condition rapidly improved. Further preliminary examination did not disclose anything except a slight secondary anemia and a chronic left epididymitis, with a discharging sinus. The pus from the latter showed staphylococci but no tubercle bacilli. The patient stated that several weeks prior to his coming into the hospital the scrotum had swollen and an abscess involving the skin had ruptured.

Cystoscopy, September 7, showed the bladder urine free from blood. A number 18 instrument was passed readily. There was an acute cystitis, but no evidence in the bladder of the source of bleeding. There were marked trabeculations. There were many shallow diverticula, and one deep diverticulum in the vault. Both ureteral orifices appeared normal. The prostatic outline showed encroachment only in the median area below, suggesting bar formation. With the instrument in place and an examining finger in the rectum, the prostatic body seemed extremely thin. The cystoscope was withdrawn into the posterior urethra and there was noted a large rent in the floor, in the midline, with distortion obscuring the verumontanum, and a thickened border extending to the internal sphincter and merging with what appeared as a median bar. The tear measured at least 1.5 by 2 cm., and its edges, as well as the cavity beneath, were plastered with blood clots. The cystoscope was passed readily into this opening for a distance of 3 or 4 centimeters. The cavity thus found could not be studied visually with the instrument used. A catheter was inserted into the bladder for continuous drainage. Cystograms,

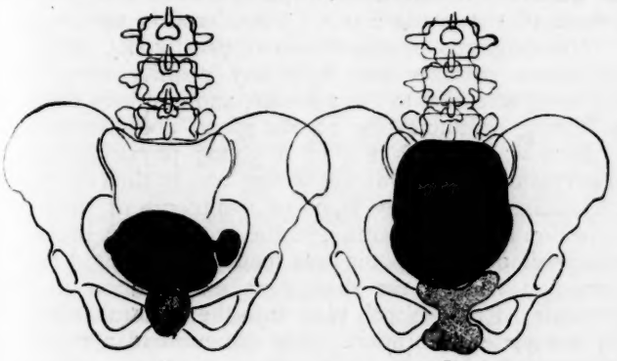

Fig. 2.—Reproduction of cysto-urethrograms. Lighter areas represent extravesical cavities. *A*, present case; *B*, case previously reported.

September 8 and 14, showed multiple diverticula of the bladder and a large diverticulum of the urethra which had the shape and appearance of the prostate. The prostatic (?) shadow was symmetrical on both sides of the midline.

The diagnosis was: prostate cavity forming an extravesical sac with retention of urine and interference with sphincteric activity, resulting in incontinence and retention; recent infection of cavity with erosion of vessels and consequent bleeding.

An operation was performed September 15 under caudal anesthesia supplemented by suprapubic infiltration of procaine hydrochloride. Cystostomy was performed, the bladder being opened widely. Digital exploration verified the diverticulitis. The internal sphincter was widely open, having lost all tone. Two fingers passed readily and entered the extra-urethral cavity, which tunneled beneath the bladder and urethra for a distance of approximately 6 cm., was of equal depth laterally and had dense fibrous walls; the surfaces were rough but did not have any projecting tissue mass. The external sphincter seemed intact. Bimanual examination with two fingers in the relaxed rectum indicated the relationship of the extra-urethral cavity as exactly corresponding to the normal prostatic area. The seminal vesicles could not be palpated.

The operative effort was to effect a free and constant union and contact of the bladder, urethra and posturethral cavity. To accomplish this the tissue, previously described as median bar, was excised. With two laterally placed mattress sutures for hemostasis and the retraction of tissues, the leaf of tissue between the cavities (bladder and false cavity) was deeply incised, and a wedge-shaped area was removed. The bladder was then closed with free drainage. Sections of the tissue excised did not show any evidence of the presence of prostatic gland elements.

The postoperative treatment consisted of daily irrigations, with the removal of the suprapubic drain tube on the tenth day. The sinus healed entirely the twenty-sixth day following operation, and the scrotal sinus also healed, the epididymitis having subsided. In the meantime the patient was ambulatory and gradually voiding by the urethra. The latter function has continued normal to the present time (twenty months). For a few weeks a slight incontinence occurred after the patient returned to his work. His activities have been normal, and his time fully occupied at work. There has not been any incontinence since this early period. Periodic examinations have failed to show any residual urine and, in spite of the diverticulitis, the cystitis subsided so that there is no frequency, and the urine has been clear and negative to ordinary urinalysis for the past year. There was a slight infection in the scrotal scar nine months after the bladder operation, which healed after superficial incision.

ANALYTIC STUDY

Previous examinations were incomplete, as they did not include a study of the urethra itself; the "median bar" was sufficient evidence, together with the trabeculations, for both incontinence and retention, as recorded by the patient's earlier attendant. Only by visual and roentgen study of the urethra could one determine the actual pathologic changes. Certainly urethroscopy is too often omitted in the routine study of obstruction of the bladder neck.

Annoying symptoms in this case were only secondary in importance to the toxemia and probable renal infection resultant from the back pressure and infected residual bladder urine. The cause of obstruction and of the residuum was not a bar but a curtain of water; as the extravesical cavity, constantly filled with urine, was constricted by bladder contraction, it acted effectively in partially closing off the urethra. Obviously the indication was for removal of the partition between the bladder and the cavity outside. One other factor was the constant inflammatory condition of the tissues of the vesical neck.

The operative procedure was decided on with intent to provide prolonged bladder drainage as well as to destroy the tissue wall in the most radical way. Both objectives were obtained. I was particularly cautious about the latter, having experienced early operative failure in a former case because of a less radical incision into the obstructing flap. Certain other methods for the incisure might have been employed; the Collings electrotome would serve admirably, but a closed operation did not promise adequate drainage either for the bladder or for the postvesical area involved. The relationship of the existing bladder diverticulitis to the bladder neck obstruction was of no great consequence; nor did I consider any operative procedure to eradicate the diverticula necessary or wise.

Congenital anomalies of the bladder (diverticula) or of the urethra (diverticulum) may have been the foundation for some or all of the pathologic changes found; this seems unlikely, however, in view of the history, relatively sudden onset of symptoms and really severe illness of the patient. Also, the ragged tear in the urethral wall does not concede the likelihood of congenital deformity.

The roentgenographic observations in the case here presented can be more readily interpreted than those in a case I [1] previously reported, in which the extravesical shadow was of a very different form. In each

1. Cumming, R. E.: Permanent Urinary Retention Following Prostatic Abscess, Surg. Gynec. Obst. **39**: 320 (Sept.) 1924.

instance, however, I assume the cavity to correspond to the "capsule" area of the prostate.

One analogy explaining the mechanical nature of the obstruction is the hydatid cyst growing in the prostate region; in fact, ordinary prostatic obstruction is not far removed in the character of its physical interference if one bears in mind the raising-up detrusor activity of the bladder.

Urethral diverticulitis is apparently rare in the male, but it is logical to assume that both types of diverticula found elsewhere do occur. The smaller out-pouchings may be associated with the various types of urethral obstructions, early described by Young of Baltimore, and more recently referred to in his textbook on urology. Day of Los Angeles has added to our knowledge of urethral obstruction resulting from congenital malformations and recently Lowsley and Gutierrez [2] have reported a series of cases of urethral diverticulitis, stressing particularly the value of routine urethrograms as well as roentgenographic study of the bladder and upper urinary tract.

Diverticula with urethral obstruction are, of necessity, acquired, although based on congenital anomalies, so it would seem more difficult to classify a given instance of urethral diverticulum as congenital or acquired, than in the case of vesical diverticula, which themselves still defy a close analysis. I can recall an instance of pseudohermaphroditism, in which a urethrovesical deformation was diagnosed "hour-glass bladder." Scrutiny of the cystogram disclosed the lower half of the so-called bladder in the normal area occupied by the posterior urethra, but largely lateral to the midline, so one might consider it a congenital diverticulum of the urethra.

If, in defining the term "diverticulum," one states the usual as to its being lined by the mucosa of its parent structure, obviously the lesion described in this paper is outlawed. I cannot designate the false cavities in this and the previously reported case as diverticula. On the other hand, Gutierrez [2] definitely considers such phenomena, even granting their entire nonurethral nature, as diverticula, and has included such cases in his series.

With final reference to the two instances of extravesical prostatic pseudodiverticular pouches causing obstruction to the bladder, and occurring in men of widely different ages, each having an exact and identical etiology, there remains one dissimilarity demanding comment. In the patient on whom I reported earlier, a man, aged 24, there was complete urinary obstruction and an extreme narrowing and sclerosis of the internal sphincter, while in the case here described the sphincter was widely dilated and inactive, and the retention was partial, associated with incontinence and voiding. One may assume that the massive, inflammatory and, later, suppurative processes attacked a normal sphincter in the younger man, and one already involved by hypertrophy of the prostate, or stretching (as witnessed by the median lobe or bar variously described), in the older patient.

The contrast was most important, however, in relation to the ease with which the bladder and extravesical pouch were brought into direct contact with each other by the surgical procedures recorded. In the younger patient, the tight sphincter presented the greatest difficulty, while in the elderly patient the relaxed or nonexistent sphincter made the problem of merging the two cavities very simple. In both cases the external sphincter has prevented troublesome incontinence.

2. Lowsley, O. S., and Gutierrez, R.: Urethral Diverticulitis in the Male, to be published.

SUMMARY

1. Careful study of the case here reported leads one to consider, in diagnostic procedures, the possibility of sudden massive destruction of the prostate with resulting grave bladder dysfunction.

2. In a former instance the phenomenon was complete and permanent urinary retention; in this case there was both retention and incontinence, and also a severe secondary hemorrhage.

3. Diagnosis depends on a complete history, cystourethroscopic studies and urography.

4. Satisfactory surgical intervention consists of a merging of the bladder and extravesical, pseudodiverticular cavity.

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PROSTATIC ABSCESS *

ANDERS PETERSON, M.D.

LOS ANGELES

Abscess of the prostate may occur in two ways. The first type is due to the direct extension of a gonorrheal infection of the posterior urethra, while the second type occurs as a metastatic involvement of the gland from some distal or general infection. Tuberculosis of the prostate is not considered in this report.

The diagnosis of this lesion is usually not difficult; but some patients may lack any positive symptoms directing attention to the prostate, and in others definite softening or fluctuation of the gland does not occur.

Harlow Brooks [1] tells of a young physician under observation for several weeks who was studied by many physicians before any signs or symptoms of prostatic infection directed attention to the prostate. A probable diagnosis of paratyphoid was made. Only slight rectal irritation late in the disease called attention to the prostate. Rupture took place into the urethra, followed by complete restoration. The patient had a negative gonorrheal history.

Kretschmer [2] reports a metastatic abscess of the prostate, following osteomyelitis of the index finger of the right hand. His patient had complete obstruction of urination and was catheterized for one week. Kretschmer opens the abscess through a straight incision in the perineum.

McCarthy [3] reports that in 104 cases the abscess opened spontaneously in seventy-four, but in 27 per cent of these more or less serious complications subsequently developed, possibly as a result of faulty drainage. He is of the opinion that all large abscesses of the prostate should be opened surgically by way of the gland proper, regardless of whether they have or have not opened spontaneously.

Randall [4] reports eight cases associated with gonorrhea and eight that were nongonorrheal. He found *Bacillus coli, Staphylococcus aureus* and gonococci. He also mentions five cases following influenza reported by Bugbee.

Barringer [5] reports fifteen cases of gonorrheal abscess of the prostate in which he successfully

* Read before the Section on Urology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. Brooks, Harlow: Internal Aspect of Prostatic Suppuration, M. Rec. **88**: 101-104 (July 17) 1915.

2. Kretschmer, H. L.: Metastatic Prostatic Abscess, Surg. Clin., Chicago **4**: 489-492 (June) 1920.

3. McCarthy, J. F.: Prostatic Abscess, Ann. Surg. **65**: 642-645 (May) 1917.

4. Randall, Alexander: Abscess of Prostate, Ann. Surg. **71**: 172-177 (Feb.) 1920.

5. Barringer, B. S.: Prostatic Abscess, J. Urol. **7**: 397-403 (May) 1922.

aspirated the pus through a large needle. He limits this method to gonorrheal abscesses only.

REPORT OF CASES

CASE 1.—A man, aged 27, a physician, seen in August, 1923, had had gonorrhea six years previously. Three weeks before examination he developed pain in the perineum, and later a temperature ranging from 99 to 102 F. An examination at that time by his physician revealed a greatly enlarged prostatic gland. The patient had a low-grade fever, associated with extreme restlessness, the entire time. Urination was possible only by immersions in baths. No catheter was used.

Examination three weeks after the onset of the symptoms showed a moderately enlarged prostatic gland, with infiltration along both seminal vesicles. The gland was exceedingly painful on palpation. There were no areas of softening, such as would be expected in a prostatic abscess. The temperature was low grade, from 99 to 101 F. Perineal pain was very severe and urination difficult. There was no discharge at the meatus.

Two days following this examination the patient developed a fluctuating area in the perineum which was incised and found to be a prostatic abscess which had ruptured through the capsule. A satisfactory recovery followed the drainage of the abscess.

CASE 2.—A man, aged 47, a hospital orderly, seen May 20, 1924, had had an acute gonorrheal infection twenty-six years previously, with double epididymitis. He had been entirely free from trouble up to three months previously, when he began to complain of urethral discharge and pain in the perineum. Three weeks before he began to be feverish and to have chills. He had been in bed for a week with a temperature ranging from 100 to 103 F. (severe chills), pain in the perineum, rectum and left hip, and severe occipital headache.

On examination the patient appeared well nourished, there was a temperature of 100.6, and a profuse discharge at the meatus. The prostate was enlarged about three times the normal size and was extremely tender, particularly on the left side, but no areas of softening were made out.

No improvement was noticed after several days of palliative treatment. The prostate was exposed, the capsule incised over the left lobe and an ounce or more of pus evacuated.

Uneventful recovery took place.

CASE 3.—A business man, aged 40, came to my office, June 24, 1925, on account of a periurethral abscess near the glans penis which was incised and drained. He also complained of frequent urination and pain in the perineum.

Examination showed a purulent discharge at the meatus, positive for gonococci. Both glasses of urine showed numerous pus cells. The prostate was large and very painful on examination but there were no areas of softening.

The patient had had an attack of urethritis many years before, complicated by epididymitis, and had had several recurrences of discharge from the urethra. He had received extensive treatment with irrigations and prostatic massage at intervals, over a period of several years.

August 3, he became distinctly worse and took to bed. He was treated by the ordinary palliative measures for a period of three weeks without improvement. During this time the temperature varied from normal to 103 F. Profuse sweating was common; there was marked urinary difficulty, and he had spells of very severe tenesmus requiring opiates for relief. Occasional rectal examination and attempts at gentle massage were extremely painful.

A perineal exploration was agreed on finally, and on August 28 the prostatic capsule was exposed and a fairly large abscess evacuated. The urethra was not opened.

A rapid recovery followed.

CASE 4.—A man, aged 29, a storekeeper, seen in September, 1925, had contracted his first gonorrheal infection two months previously, and still showed an active urethral discharge. Two weeks prior to examination he developed severe pain in the perineum, associated with chills and fever and at times difficulty in urination.

He had received hot rectal irrigations, rectal suppositories, and, at times, opiates, without improvement.

Examination showed a purulent urethral discharge in which the gonococci were numerous. The urinary stream was fairly good; both glasses of urine showed numerous pus cells, and the prostate was markedly enlarged, very firm and painful to the touch. The temperature was 101.6 F.

Palliative measures were advised but the symptoms became more severe. After three days he was sent to the hospital and a perineal section was done to expose the prostatic capsule. The left lobe of the prostate was found to contain an abscess of about 1 ounce (30 cc.) capacity. The man continued to have fever for several days following the operation. He complained of pain in the left hip and thigh. An epididymitis developed during his convalescence. Prostatic massage and bladder instillations had to be used for more than two months following the drainage of the abscess before the urine cleared up.

CASE 5.—A man, aged 25, a student, was admitted to the hospital, May 12, 1924, with urinary retention. The history was negative for gonorrhea. He had had influenza one month previously, lasting one week. One week following this attack of influenza he complained of tenderness in the perineum, and three days prior to admission to the hospital he had noticed marked frequency and difficulty in urination, so that he had to be catheterized. He had not passed any blood or had any renal colic.

Examination showed the bladder to be distended nearly to the umbilicus. The prostate was enlarged three times the normal size and was hard and tender. The urine showed numerous pus cells, negative for gonococci. Leukocytosis was 15,700.

Catheterization was carried out from two to three times daily. He was given hot sitz baths and general care. On the third hospital day the patient reported that he felt something give way and he emptied the bladder freely. The specimen contained a large amount of bloody purulent material. He was entirely relieved and left the hospital two days later. Prostatic massage and bladder irrigations were done once or twice a week for the two following months. The recovery was very satisfactory. No cause for the abscess other than the attack of influenza could be found.

CASE 6.—A man, aged 52, a tailor, came to my office, Dec. 14, 1925, because of painful and frequent urination. He stated that he had never had venereal infection. Following a severe attack of influenza he had developed frequency and painful urination. The stream was poor, but there was no kidney pain, and no blood was passed. Three weeks prior to examination, in the early morning, the stream stopped and he passed a lump through the urethra after which the symptoms became aggravated. He got up from eight to ten times at night. There was a loss in weight of 10 pounds (4.5 Kg.).

On examination he appeared poorly nourished. The temperature was 99 F. The blood pressure was 120 systolic and 80 diastolic. The urine was cloudy with pus. The prostate was markedly enlarged and tender, and appeared to be inflamed.

Cystoscopic examination revealed marked prostatic intravesicular enlargement with marked edema of the bladder base, so that the ureteral openings could not be seen.

In the night following the cystoscopic examination the patient passed a considerable amount of purulent urine, mixed with blood. Prompt relief, both from pain and from frequency, was reported, and the stream was much improved. Prostatic massage and bladder irrigations, for a short time, cleared up the urine. The patient began to gain weight at once and made a perfect recovery.

CASE 7.—A business man, aged 60, seen in my office, in July, 1925, stated that while traveling in Europe six weeks previously he had developed an abscess in the nose, which gave him severe disturbance, until it was finally lanced by a surgeon in Paris. About this time he began to have frequency and pain on urination, and was treated with various medications in Paris and later in New York and Chicago. When seen one month following the onset, he had to urinate every fifteen minutes and the act was very painful. He had not passed any blood or gravel.

On examination the patient appeared well preserved. The blood pressure was 145 systolic and 90 diastolic. The nervous system was normal. The Wassermann reaction was negative.

The urinary stream was poor, with 1½ ounces (45 cc.) of residual urine. The sediment showed a few pus cells. The prostate was moderately enlarged and tender.

As I felt that I was dealing with a case of prostatic hypertrophy with acute symptoms, I advised palliative measures. The patient went home to bed, and during the evening reported a rise in temperature to 102 F., and severe bladder disturbance which I attributed to the use of the catheter during the examination. During the night he was disturbed frequently and toward morning passed two specimens which contained large amounts of pus. During the following day he voided in a good stream with only slight discomfort. The temperature became normal and the urine cleared up rapidly. He was about his duties in a few days, and has not had any further disturbance.

OPERATION

A satisfactory method of approach in opening a prostatic abscess consists of introducing the Young prostatic tractor into the bladder in order to pull the prostate against the perineum. The inverted U incision is employed, the skin and fat being cut through. Blunt dissection is then carried out on each side of the central tendon of the perineum, until the prostatic capsule is exposed. The central tendon is not severed but is pulled to one side of the median line by narrow-bladed retractors. A longitudinal incision is made into the prostate and the cavity is explored with the finger to break down any septums.

If it should be deemed essential, each lobe can be opened for drainage, but this is usually not necessary. The urethra need not be opened intentionally, but no harm comes if this occurs. The cavity is packed with iodoform gauze, and a small tube drain is left in place for one week. The pack is removed in from twenty-four to forty-eight hours.

COMMENT

In reviewing the observations in the cases reported, I have been impressed by the fact that softening and fluctuation of the prostate is not by any means a constant finding in the presence of an abscess. Indeed, in some of these patients I have not been sure that a discrete abscess existed until the capsule itself had been incised, and blunt forceps introduced into the gland substance. I believe that in many cases a thick wall of infiltration about the abscess prevents one from eliciting this sign. The observations on rectal examination have been similar to those in severe acute prostatitis.

When spontaneous rupture did not occur, surgical drainage was instituted after a reasonable period of palliative measures had failed of improvement.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. CUMMING AND PETERSON

DR. GILBERT J. THOMAS, Minneapolis: Dr. Peterson divided abscesses of the prostate into two etiologic groups, those produced by the gonococcus and those produced by other organisms from extra-urinary foci. In small abscess of the prostate, the ordinary symptoms may not be present, as Dr. Peterson has pointed out. With the finger in the rectum, one may not be sure that a prostatic abscess is present. Later, after incising the prostate, an abscess may be found. I believe we overlook many small abscesses and other infections in the prostate. We know from the work of Von Lackum and others that infection in the prostate is frequent, not only following gonorrhea but secondary to other foci. In my experience more than 50 per cent of the infections in the prostate are due to bacteria other than the gonococcus. Infections in the prostate may not produce the usual symptoms of pain or aching with fulness in the perineum. There may not be chills or fever, but there may be urinary symptoms only. The prostate is not entirely a genital organ; it is a urinary organ as well. The nerve and muscle supply is the same as that of the bladder, and with infection in the bladder or the prostate it is easy to see why urinary symptoms may be most noticeable. In one of my cases multiple prostatic stones produced symptoms which were diagnosed prostatic abscess. I missed the diagnosis in this case, so that now I make a roentgenogram of the prostate area in all suspected cases of prostatic abscess so that I may differentiate multiple prostatic stones. Dr. Cumming called attention to infection in the periprostatic and perinephritic tissue. We should always consider the possibility of a perinephritic invasion being secondary to a prostatic infection. It has been my experience that with prostatic abscess there most often is an associated bilateral pyelonephritis. If we drain a prostatic abscess and pyuria continues, we should remember that the upper urinary tract may be infected. As to treatment of prostatic abscess, I agree with Dr. Peterson that it should be first expectant and then surgical. I have been able to relieve some of these patients by inserting a sound and punching a hole through the urethra into the abscess. This has relieved the condition by producing drainage and has finally brought about cure. If we assume that most prostatic infections are due to extra-urinary foci, then, following drainage by sound, surgery, or otherwise, we must be sure to rid the patient of all possible foci of infection. We have used 1 per cent mercurochrome intravenously in the type of case Dr. Peterson described, wherein he was not sure that an abscess was present. The infection was controlled after one injection, so that pain, fulness and fever disappeared. We do not use this method as a routine.

DR. JOSEPH F. MCCARTHY, New York: These two papers could not well be improved on, and each has supplemented the other. I am glad to see that Dr. Peterson has approached a definite surgical entity in a surgical manner. I believe that the time of touch operations is rapidly passing and in the near future will be relegated to the limbo of surgery. All prostatic abscesses should be opened once the diagnosis is established, and one should not treat these patients expectantly very long, because only the occasional case will be relieved by expectant methods. I believe that the perineal is the proper route of approach for prostatic surgery. Dr. Cumming's paper vividly demonstrates the intra-urethral destructive possibilities of prostatic abscess. It is bad surgery to aggravate that destruction further with sounds. In the first place, the operator has not a true conception of the amount of injury being done or just where it is being done. Even if these abscesses do open spontaneously, when one opens them properly and affords adequate drainage one gives them a reasonable chance to heal. These abscesses point into the urinary tract either in a cribriform or a cavernous type of opening. It is in the type of case mentioned by Dr. Cumming that we see recrudescences. I believe it cannot be emphasized too strongly that here is a surgical entity which should be treated by sight and not by touch.

DR. ROBERT H. HERBST, Chicago: I quite agree with Dr. McCarthy's view in regard to the treatment of prostatic abscess. For me, the diagnosis of prostatic abscess is sometimes difficult, particularly the determination of the presence of an abscess before fluctuation is felt on rectal palpation. In many cases, if one waits until these abscesses fluctuate, the destruction of glandular tissue has gone on much too far; in some instances little glandular tissue may remain. I believe that when the symptoms and signs lead one to believe that one is dealing with an abscess, it should be opened even though there is absence of fluctuation. There are some who believe that in all cases of acute prostatitis drainage should be by perineal section, and although I cannot subscribe to this practice, I think that these abscesses should be opened early. The use of a sound to break into the abscess through the prostatic urethra is not a good method and is contrary to good surgical principles. It is likely to leave a pocket which communicates with the prostatic urethra and which may continue to suppurate indefinitely.

DR. ALBERT E. GOLDSTEIN, Baltimore: Why any one waits today to open a prostatic abscess is beyond me. In cases of abscess of the finger or perinephritic abscess, we do not hesitate to open the abscess and institute drainage, and it seems to me that the policy we have been following of

waiting for the abscess of a prostate to rupture into the urethra is wrong. As a result of an unfortunate experience which I had in a case of prostatic abscess, waiting for it to rupture into the urethra, I have ceased to wait for a prostatic abscess to rupture. After much suffering on the part of the patient, the abscess finally ruptured through the rectum, and left a fistula through which he still passes urine. As soon as I make the diagnosis, an exposure is made through the perineum, which I think is the ideal procedure, and pus is invariably obtained. We know when a prostatic abscess ruptures that it usually ruptures into the prostatic urethra. There we have the opening of the two ejaculatory ducts. We are always talking about preventing epididymitis, so why wait until an abscess opens there and take the chance of developing a bilateral epididymitis? By opening the abscess in time, we can prevent this occurrence. Another paper read before this section mentioned the possibility of a focus of infection from a perinephritic abscess into the prostate. There again we should not wait before opening the abscess, for we know it can act as the focus of infection. When these lesions are diagnosed, they should be opened immediately, and without hesitation.

DR. CLARENCE G. BANDLER, New York: I have had the opportunity of seeing several cases of perirenal abscess as well as prostatic abscess complicating influenza, especially during the several epidemics of recent years. I, too, should like to add a word of protest relative to the use of the steel sound in evacuating prostatic abscesses through the urethra. In New York, we are quite familiar with the work of Dr. Stevens and his associates, and while we recognize their surgical acumen we still believe that this procedure is distinctly unsurgical and should be condemned. All of us have seen deep cribriform and cavernous spaces develop in the floor of the prostatic urethra following this procedure, as well as following the spontaneous evacuation of prostatic abscess, and years have been devoted by us to effect suitable granulations in these cases, but without satisfactory results. I believe that in the majority of cases no permanent cure is effected by the aforesaid procedure. Early perineal incision of prostatic abscesses, without opening of the urethra, is, to my mind, the procedure of choice as soon as a diagnosis is definitely established. I also think it is better to incise prostatic abscesses before definite disintegration takes place rather than to wait for spontaneous evacuation.

DR. B. A. THOMAS, Philadelphia: It is a well established surgical procedure that when or wherever an abscess develops, it should be evacuated. Surely this practice should hold true for a prostatic abscess, just as for any other abscess. I thought that this problem was settled several years ago—that it was decided that the proper treatment of a prostatic abscess was perineal prostatotomy, not the rupture of the abscess intra-urethrally by the passage of sounds. Therefore I must take exception to Dr. Gilbert Thomas's statement, although we are bound by familial ties. I do not see how we could have a more beautiful example of the evil of evacuating a prostatic abscess, intra-urethrally, than we have in Dr. Cumming's paper. He has illustrated beautifully the evil effects of such an occurrence, through natural causes. In connection with this subject, I wish to call attention to the fact that in exceptional cases, while one is preparing for the operation, the abscess ruptures spontaneously into the urethra during the night or shortly before the hour set for operation. This accident, to my mind, should not be construed as a contraindication to proceeding with perineal prostatotomy. If the operation is nevertheless done and the prostate drained perineally, the urethral rupture will cease draining and heal promptly, thereby preventing those crypts in the prostatic urethra predisposed and destined to harbor infection or to give rise to annoying deep urethral irritation for years afterward. Finally, all these patients have a prostatitis preceding and following the abscess. After drainage of the abscess, a chronic prostatitis persists and calls for careful prostatic massage for weeks or months. In other cases urethral tags and polypoid formations will be found to exist, necessitating high fulguration for their removal and relief from distressing symptoms.

DR. RILEY M. WALLER, Manhattan, Kan.: I was trained in a clinic where the treatment of surgical mumps was rather empirically carried out by incision of the skin and multiple puncture drainage of the parotid gland. In another clinic where I was further trained, operations for surgical mumps were seldom, if ever, done. It always seemed to me that there were advantages and disadvantages to each method and that the patient's eventful welfare was about the same in either clinic. I think that this applies also to the subject of prostatic abscess. Not every case of parotid inflammation will go on to frank abscess formation, nor will every case of prostatic inflammation. When we see good men on both sides of the fence obtaining about equal results, it seems that there should be some middle ground. If there are continued symptoms present that make one feel reasonably sure that the prostatic disease alone is responsible, or if there is a definite fluctuating abscess, then I believe we should go ahead and drain. If these are not present, the condition will probably subside spontaneously, as do the cases of unoperated surgical mumps.

DR. LOUIS CLIVE JACOBS, San Francisco: A contributing factor in the diagnosis of borderline cases is to aspirate with a very fine needle through the rectum, when it is not certain that an abscess is present. This procedure has materially helped me. Though this method has been criticized by others, I have not had any bad results and would advise its use. Many cases of abscess of the prostate can be diagnosed by use of the cystoscope. These abscesses usually rupture spontaneously through the posterior urethra; though I have had many that opened themselves intravesically just within the sphincter. These openings should always be probed and enlarged, thereby affording better drainage. I am largely in accord with those who approve of the perineal method of drainage in those cases that do not spontaneously rupture.

DR. MEREDITH F. CAMPBELL, New York: In the past fifteen years about 500 operations for prostatic abscess have been performed at Bellevue Hospital and various operative methods have been employed. Some time ago perineal aspiration was done in a few cases by Barringer's method and satisfactory results were obtained when the abscess was of gonococcal origin and still intraprostatic. In one or two cases of nongonorrheal origin a severe pelvic cellulitis resulted, and we no longer employ this method. At present the digital examination indicates the surgical treatment. If there is associated periprostatic involvement, perineal prostatotomy is performed, as in more than 300 of our cases. If there is no periprostatic involvement, the sound operation of Dr. A. R. Stevens is done. To date, 117 patients have been operated on by this method. At Bellevue we have used the sound operation partly for economic reasons. The incidence of postoperative complications with the two methods is essentially the same, but with the sound operation the patient is out of the hospital on the third day whereas with the perineal prostatotomy some of these patients have been confined to the hospital three weeks. Those cases which have been followed urethroscopically have not shown unusual posterior urethral pocketings. The sound operation is our method of choice at Bellevue Hospital unless there is periprostatic involvement. I recently saw a prostatic abscess of gonococcal origin in a child, aged 2½ years. There was marked dysuria, frequency and balanoposthitis. With the introduction of the examining little finger into the rectum, the large prostatic abscess ruptured into the urethra. The condition subsequently went on to a clinical cure.

DR. VICTOR G. VECKI, San Francisco: Sometimes we have to consider the patient. Many of them refuse to have an operation. I am glad to know that what I first said in 1888, in the first edition of my book on sexual impotence, that the prostate is a genital as well as a urinary organ, has become recognized. When the prostate gland begins to act as an impediment to voiding from the bladder, it is a urinary organ but even so it should never be operated on, without any regard to the man's sexual capacity.

DR. BUDD C. CORBUS, Chicago: It seems that some of the men are confusing nongonorrheal prostatifis with the gonorrheal type. I believe that gonorrheal prostatitis should not be treated surgically in every case. We have seen many cases of gonorrheal prostatitis in our office during the last several years that went on to abscess formation. In every instance we have treated these cases with diathermy. Heat will destroy the gonococcus, and if it is not successful, surgery is still available. There has not been a single case in which we have not attenu-

ated the gonococcus and brought the case to a successful termination through this treatment. With the active electrode over the abdomen and a thermophore in the rectum, we can have the heat wherever we want it and can absolutely destroy the gonococcus. Every urologist should have a diathermy machine and should become familiar with the nonsurgical method of relieving this distressing condition.

DR. A. G. WETHALL, Minneapolis: I wish to report a mortality from prostatic abscess. Last year I saw a case of typical prostatic abscess from gonorrhea. The gland was very large and hard. The temperature ranged from 101 to 103 F., with chills, and the patient was extremely restless. As soon as fluctuation was present, the abscess was opened by the perineal method and drainage was established. The man did well for a day, but developed a very severe sepsis and died within three days. It may be that the abscess should have been opened earlier. That might have saved the patient.

DR. A. I. FOLSOM, Dallas, Texas: I agree with Dr. McCarthy that the open procedure is rational and surgical, as against blind manipulation with the sound. It is many times very difficult for me to detect fluctuation in these cases, and I frequently operate before I am positive that there is fluctuation, and find that the abscess is frank even at that time. There is another group of cases in which I have felt that suppuration was present, but when I opened the prostatic lobe with sharp forceps I found that I was mistaken. I have found that by putting a tube into each lobe and draining for a few days, exactly the same subsidence of the situation results as in the cases that are frankly suppurative. I believe that it is much better surgery to operate in these cases before there is frank fluctuation than to let them go too long. It is my custom to tell the patient that we may not find a collection of pus, but that I am confident the convalescence will be shortened by following this procedure. The same thing is seen in our method of treating the epididymis. We rarely find a frank fluctuation, and yet by needling these cases we secure subsidence of the whole picture. I think that in many of these cases structure and function can be definitely conserved by opening and draining before suppuration occurs. I do not agree with Dr. Peterson in his use of the tractor for opening the prostatic abscesses. I think it unnecessary. It is an additional trauma to the urethra and to the prostatic urethra, which at that time is in a very dangerous and poorly balanced condition, and it is very dangerous to do a urethrotomy and drain in that way. I think that an opening on either side with a small tube inserted accomplishes all that should be done. In my experience these patients have not had any difficulty in emptying the bladder after this procedure, and I think the more conservative surgery in this regard is distinctly the best type of surgery.

DR. THOMAS L. HOWARD, Denver: I do not believe that any of these cases are due to the gonococcus alone; they are all due to a mixed infection. As to the other type of cases mentioned, we have had several following influenza. In 1927 there were two students from the university who had prostatic abscesses and who had never had gonorrhea; they were recovering from influenza and developed an abscess, which we drained. Another type of case which I think is getting away from the urologists and in which the proctologists are operating is the perirectal abscess. Why do so many men have perirectal abscesses as compared to women? In these perirectal abscesses which are due to an extension of the prostatic and seminal vesicular infection, there will never be complete recovery unless the prostate and seminal vesicles are cleared of their infection.

DR. ANDERS PETERSON, Los Angeles: I want it distinctly understood that I am not trying to operate in every case of prostatic abscess. I know what to do when I have made the diagnosis. There should always be drainage. There is no question in the mind of any one about that. The problem that confronts me in this work is a question of diagnosis. An acute prostatitis causes a rise in temperature, leukocytosis and a large tender gland, which may be as large as any gland that has a discrete definite abscess, and this is the reason why I suggest the conservative method for a reasonable time. Ordinarily an acute prostatitis will subside under palliative measures. The leukocytosis will gradually decrease, and the patient will improve; but, in my experience, patients with abscess do not do well. These symptoms remain and are aggravated, and I think we have to differentiate somewhere as to when to operate. As to the question of operating for the abscesses that have ruptured spontaneously—this problem is not in our hands, for the patient gets well clinically and will not permit operation. I could not operate on men who had begun to urinate well and were not having any further trouble. As to the technic and the use of the long prostatic tractor, it is of distinct advantage in doing this work. I have not seen any trouble result from it. The after-results in this limited group of cases have been very satisfactory. I think the fact that we can open the abscess and pack, as we would in other surgical cavities, and instil medication, if we wish, is of great advantage in curing the disease. The patients who have a prostatic infection and develop a discrete abscess are, in a sense, fortunate, for they get well more definitely and more rapidly than do those patients with ordinary acute prostatitis.

DR. ROBERT E. CUMMING, Detroit: The discussion has quite naturally been concerned largely with prostatic abscess, while my presentation referred to the very serious after-effects of this condition. I agree with Dr. B. A. Thomas, who says that there are complications following prostatic abscess, and that the method of drainage is important, the open operation being preferable. We all know that many general surgeons open prostatic abscesses with a sound, and in a large majority of instances their patients improve and come to a clinical cure. As Dr. Vecki brought out, the patient may refuse operation and we must think of some less radical measure. Relative to Dr. Goldstein's remarks, I may say that in both instances reported, potency, which had been lost, returned, not only in the young man of 22 but in the elderly man of 60. I wish to express my regret that I was neither criticized nor helped in my choice of the method of controlling this complication. Likewise, I wish to state that the value of urethroscopic examinations is of extreme importance, and secondary only to complete urography.

USE OF ALKALIS IN THE TREATMENT OF PEPTIC ULCER *

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The advent of the Sippy method of ulcer management has raised the position of the use of alkalis to one of prime importance. The basic reason for their use, the accurate neutralization of the hydrochloric acid of the gastric juice and thereby the elimination of the corrosive action has, however, not been generally accepted as a fact. A large number of investigators and clinicians are not entirely convinced that the symptoms of peptic ulcer are the direct result of such corrosive action but, on the contrary, feel that the use of alkalis in amounts sufficient to effect a complete neutralization is not entirely free from danger. In 1923 Hardt and Rivers [1] and later others [2] described symptoms which were ascribed to the use of large doses of alkali and grouped under the terms alkalosis and toxic nephritis. High blood carbonates and an elevation of the nonprotein nitrogen of the blood were noted

* Many beds were available for this work through a grant by Mr. Julius Rosenwald.

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* From the Stomach Study Group and the Otto Baer Fund for Clinical Research of the Michael Reese Hospital, and the Nelson Morris Institute for Medical Research. The Stomach Study Group consists of Drs. A. A. Strauss and M. L. Parker, surgery; Leon Bloch, medicine; Oscar T. Schultz, pathology; Robert A. Arens, roentgenology.

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as evidences of the toxic action of too much alkali. As sodium bicarbonate is the principal alkali in use, the symptoms are laid to its door. Koehler [3] has shown that an alkalosis of the blood represented by a p_H of from 7.50 to 7.55 can be maintained for several weeks by the administration of sodium bicarbonate or citrate, recovery from which is possible in from twenty-four to forty-eight hours. We have used alkalis in the treatment of peptic ulcer for many years and have rarely seen the serious manifestations described by others.

This report is based on a study of sixty cases of peptic ulcer—gastric, duodenal and gastrojejunal—seen during the last year. The diagnosis was made by the eliciting of a more or less typical history and was confirmed by roentgenologic examination. Records were noted of the amount of alkali administered, the day on which the urine became alkaline and the results of titrations of the gastric contents. Determinations of the carbon dioxide combining power and the nonprotein nitrogen and chlorides of the blood were made at various times during the stay of the patients in the hospital. Hydrogen ion determinations were not made, mainly because a true determination can be made only by complicated methods. It was felt that the results from a clinical standpoint would not warrant such technical difficulties. This opinion is substantiated by the work of Balint,[4] Van Slyke [5] and Koehler.[3]

In some cases alkalis were not used. Calcium carbonate was used frequently in several cases, disodium phosphate in a few. Magnesium oxide was used in a large number of cases. The drawback to the use of magnesia is its cathartic action. In a large number of cases the magnesia had either to be reduced in amount or entirely eliminated. The bowel symptoms following its administration very frequently made its use prohibitive. In some, a very disagreeable colitis developed in spite of constant admonition to the patient to cease its use if more than two bowel movements occurred daily, if the bowel movements were watery or if cramps developed. It might be of interest to state that many patients who took magnesia developed cramps and dizziness. We call attention to this because dizziness is noted as a symptom of alkalosis. Both these symptoms disappeared when magnesia was withdrawn. Sodium bicarbonate was used in most of the cases. At the beginning the regular Sippy powders consisting of 10 grains (0.65 Gm.) each of sodium bicarbonate and magnesium oxide, alternating with 10 grains of calcium carbonate and 30 grains (2 Gm.) of sodium bicarbonate, were used. We have gradually reduced the amount of alkali, not so much because of the adverse symptoms as for the lack of necessity for it. The patients were put to bed and placed on a 3 ounce (90 cc.) mixture of equal parts of milk and cream every hour. Occasionally a patient was encountered who could not tolerate milk and cream mixtures and was therefore placed on an egg, custard, gelatin pudding, cocoa and chocolate diet with as much of the milk and cream mixture as could be tolerated. Every two days either an egg or a strained cereal was added. At the end of the period of observation the diet consisted of milk, cream, eggs, cereals, custards, gelatin puddings, purées, apple sauce, mashed potatoes, toast and, in some instances, fruit juices. The amount at any one feeding never exceeded 7 ounces if the patient was on hourly feedings and varied from about 10 to 12 ounces (300 to 360 cc.) if the patient was on two hourly feedings. Titrations of gastric acidity were made before any treatment was instituted, one-half hour after a powder was taken, either at about 9 p. m. or at some time during the afternoon.

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GASTRIC ACIDITY

Some patients did not receive any alkalis for days because aspirations of the stomach contents revealed an absence of free hydrochloric acid. When, on subsequent titrations, free acid was obtained, 10 or 20 grains (0.65 or 1.3 Gm.) of calcium carbonate or from 5 to 10 grains (0.32 to 0.65 Gm.) of sodium bicarbonate was allowed. Sodium bicarbonate was again added if free hydrochloric acid continued to be found. We realized that a single aspiration revealing no free acid did not necessarily imply that an aspiration performed one or two hours later or the next day might not reveal free acid. We noted that in some instances in which a Rehfuss tube was allowed to remain in the stomach for a period of two or more hours, during which time the patient continued his feedings and powders, aspirations of some of the contents every fifteen minutes

TABLE 1.—*Effect of Sodium Bicarbonate on the Carbon Dioxide Combining Power of the Blood*

Case	Day	Sodium Bicarbonate Grains	Carbon Dioxide	Symptoms
3	1	0	57.9	
	5	26	73.9	
	25	212	65.4	
10	1	0	70.5	
	11	102	71.5	
	21	196	70.7	
11	1	0	68.8	
	16	36.7	93.2	
	31	279.4	98	Dizziness
	46	774.1	85	None
	64	1,700.8	55.6	Occasional dizziness
13	1	0	61.7	
	4	18.7	71.7	
	13	308.	77.8	
	18	578.7	84.1	
15	1	0	74.6	
	21	147.	79.8	
16	1	0	57.7	
	6	70	62.4	
	18	359	55.2	
19	1	0	58.3	
	9	39	61.4	
	23	268	63.7	
21	1	0	64.1	
	15	38	70.6	
	23	169	64.3	
23	7	0	59.0	
	9	103.7	61.9	Urinary burning
	19	243.7	60.4	Renal colic
24	1	0	70.1	
	11	46.7	70.	
	29	383.3	78.5	
	43	1,092.7	63.1	Occasional dizziness
	47	1,205.3	66.9	None
27	1	0	60.	
	5	18.7	71.8	
	16	33.6	60.3	
	19	420.	67.2	
28	1	0	64.3	
	8	65.3	77.1	
	22	427.7	65.2	
33	1	0	64.1	
	17	56	76.6	None
	28	320	89.1	
34	1	0	46.2	
	7	129.7	107.	Dizziness
	23	577.7	115.	Urinary burning
	36	759.7	73.4	Dizziness, none
35	1	0	57.9	
	14	37.3	68.1	
	26	37.4	68.	
36	1	0	59.4	
	15	18	63.7	
	25	224	61.7	
38	1	0	64.1	
	13	88.7	67.	
	18	170.3	62.8	
42	1	0	64.3	
	18	288	69.8	
49	1	0	60	
	10	160	71.2	
	17	372.7	66.8	

yielded a fairly constant absence of free acid. In others there might be an absence of free acid on several aspirations on several days, and then for some unaccountable reason free acid titers of from 60 to 80 would appear. This obtained particularly in those patients in whom sodium bicarbonate was repeatedly added to effect a complete neutralization. Increasing the amounts of sodium bicarbonate seemed only to increase the amount of free acid without in any way increasing the symptoms that might be ascribed to hyperacidity. This is even more true in patients with a high grade pylorospasm and retention or with the old indolent type of ulcer. We have come to the conclusion, from our observation of this type of patient in whom neutralization is difficult, that they do not fare any worse after they leave the hospital than those in whom complete neutralization has been obtained, provided they adhere to a prescribed diet.

BLOOD CARBONATES

A blood carbonate determination was made in every case before any alkali was administered. A second was usually made about ten days after alkali treatment was instituted and a third was made just before the patient left the hospital. In those patients who remained in the hospital for a longer period of time, four or five determinations were made. In the absence of hydrogen ion determinations the carbon dioxide combining power of the blood should furnish the best index of the existence of a possible alkalosis. Only rarely have we been able to find a considerable increase in the blood carbonates with the continuance of alkali administration. This, without the development of the symptoms of alkalosis, should be the deciding factor as to whether alkalis should be continued. In one case the carbon dioxide content reached 115 at one time and dizziness did occur. On the next examination the carbon dioxide was lower and the dizziness had disappeared.

Table 1 shows the blood carbonates in those patients to whom large quantities of alkalis were given. It seems therefore that the danger of raising the blood carbonates and of causing the development of so-called symptoms of alkalosis is not much to be feared.

NONPROTEIN NITROGEN

An elevation of the nonprotein nitrogen of the blood is mentioned as one of the unfavorable results of continued alkali administration. If the upper normal limit of nonprotein nitrogen is taken as 40, it is interesting to note that in our series of cases most of the patients showed a high level at the outset. As the administration of alkali continued there was a drop in the amount in twenty-one out of thirty-three cases. Table 2 shows the relation between the nonprotein nitrogen and the alkali intake in thirteen cases. It is known, of course, that in the natural course of events there is a drop in the nonprotein nitrogen of the blood in patients who are at rest in bed. Hence if the alkali were to have any untoward effect not only would there not be a drop but there might be an elevation. In eight cases in which there was an elevation, the increase was slight. It is of particular interest to note that in those cases in which there were urinary observations of pathologic import at the outset there was no increase or very slight increase in the nonprotein nitrogen.

BLOOD CHLORIDES

In quite a number of cases there was a slight elevation of the blood chlorides toward the end of the patient's stay in the hospital. In a previous publication we called attention to a possibility of fixation of the chlorides in the blood by the sodium ions which are taken up by the blood stream when sodium bicarbonate is administered. For practical purposes it can be said that the administration of sodium bicarbonate to patients with ulcer has little if any effect on the blood chlorides.

URINARY TRACT

Neither calcium carbonate nor magnesia appears to have any effect in changing the reaction of the urine. The administration of from 30 to 40 grains (2 to 2.5 Gm.) of calcium carbonate every hour failed to turn an acid urine alkaline. The addition of sodium bicarbonate effected a change within a day or two, depending on the amount administered. In our series there were eight patients who at one time or other showed pathologic elements in the urine. In seven they were present at the outset, as a trace of albumin, as hyaline or granular casts, or as white blood corpuscles. In the eighth case a few red blood corpuscles appeared

TABLE 2.—*Effect of Sodium Bicarbonate Intake on the Nonprotein Nitrogen of the Blood*

Case	Day	Sodium Bicarbonate Grains	Nonprotein Nitrogen Mg.	Symptoms
3	1	0	56	
	5	26	44	
	25	212	48	
6	1	0	58	
	9	37	44	
	17	140	43	
11	1	0	46	
	16	36	43	
	31	279	42	Slight dizziness
	46	774	40	
	64	1,700	41	Slight dizziness; pain in legs
13	1	0	40	
	4	18.7	42	
	13	308.	..	
	18	578.	34	
17	1	0	60	
	6	56	44	
	14	130	40	
18	1	0	30	
	9	28	46	
	21	140	40	
19	1	0	46	
	9	39	34	
	23	268	30	
21	1	0	44	
	15	38	50	
	23	169	35	
23	1	0	44	
	9	103	42	Slight urinary burning
	19	243	42	Diarrhea; cramps; right renal colic
24	1	0	41	
	11	46.7	44	
	29	383.	31	
	43	1,092	..	
	47	1,205	43	
	Sixth month		54	
26	1	0	55	
	6	14	60	
	19	142	36	
27	1	0	46	
	5	18	44	
	16	330	..	Urinary burning
	19	420	36	Occasional urinary burning
28	1	0	40	
	8	65	43	
	22	424	32	
32	1	0	54	
	8	75	52	
	13	177	43	
	18	317	31	
34	1	0	78	
	7	129	64	Diarrhea; dizziness;
	23	577	54	urinary burning
	36	759	72	No urinary burning
35	1	0	58	
	14	37	54	
	26	374	..	
	Fifth month		58	
38	1	0	42	
	13	88.7	41	
	18	170	48	
44	1	0	54	
	9	30	50	
	21	142	45	
52	1	0	40	
	11	25	41	
	22	158	35	

at one examination and were not found subsequently. Two cases require comment:

CASE 1.—A man, aged 45, with an old prostatitis and vesiculitis, developed burning on urination during the second week and a renal colic at the end of nineteen days. His symptoms were relieved when calcium carbonate was substituted for sodium bicarbonate.

CASE 2.—In a man, aged 60, with an hypertrophied prostate, urinary symptoms increased with the continued administration of alkali. He later developed acute obstructive symptoms, for which he was transferred to the urologic service for further treatment. The continued presence of alkaline phosphates in the urine undoubtedly was influential in increasing the symptoms referable to the urinary tract.

The other patients in whom no infective process existed did not suffer in any way from the continued taking of alkalis, either subjectively or by noticeable

TABLE 3.—*Relationship of Sodium Bicarbonate Intake to Nonprotein Nitrogen and Urinary Observations*

Case	Day	Sodium Bicarbonate	Nonprotein Nitrogen	Reaction	Albumin	Casts Red Blood	Corpuscles	Symptoms
5	1	0	58	Acid	0	Occasional hyaline	0	None
	8	18.6	52	Acid	0	Occasional hyaline	0	None
	15	35.	43	Acid	0	Occasional hyaline	0	None
9	1	0	41	Acid	0	Occasional granular	0	
	8	18.7	24	Acid	0	0	0	Shoulder pain
	12	46.	..	Alkali	0	0	0	None
	21	112.1	41	Alkali	0	0	0	None
11	1	0	46	Acid	0	0	8–10 h.p.f.	None
	31	274	42	Alkali	0	0	..	None
	46	774	40	Alkali	0	0	..	
	64	1,700	41	Alkali	0	0	..	None
20	1	0	48	Acid	0	Hyaline and granular	0	None
	16	60	42	Neutral	Trace	Hyaline and granular	0	None
	22	102	51	Alkali	0	Occasional hyaline	0	None
23	1	0	44	Acid	Trace	0	0	
	9	103.7	42	Alkali	Trace	0	0	Slight burning on urination
	19	243	42	Alkali	0	0	rbc	Renal colic
34	1	0	78	Acid	Trace	0	wbc	
	7	129	62	Alkali	Trace	0	wbc	
	23	577	54	Alkali	Trace	0	wbc	Urinary burning
	36	759	72	Alkali	Trace	0	wbc	Urinary burning; prostatectomy later
36	1	0	46	Alkali	Trace	Occasional granular	0	
	26	140	39	Alkali	Trace	Occasional granular	0	None
45	1	0	41	Acid	0	..	many	
	18	84	..	Acid	Trace	Occasional hyaline	occ.	None

changes in the nonprotein nitrogen or the carbon dioxide combining power of the blood.

In table 3 is shown the effect of sodium bicarbonate intake on the nonprotein nitrogen of the blood and of the urine.

UNUSUAL SYMPTOMS DEVELOPING IN THE COURSE OF TREATMENT

Five patients in this series and one who was on an ambulatory form of treatment at the time developed shoulder pain. One said that he always obtained relief by taking an alkali powder. All were taking magnesia and had some form of bowel distress. The question arises as to whether or not the shoulder pains are not the result of the attending colitis.

CONCLUSION

In most patients alkalis do not seem to be absolutely necessary for treatment, because as soon as the patient is put to bed and placed on frequent feedings of a nonirritating bland diet the symptoms disappear. Why, then, are alkalis used at all? One of the most difficult habits to discard is the one that is forced on the physician through long training and example, plus the feeling that possibly the patient is being neglected if some form of alkali to neutralize the gastric acidity is not administered during the course of treatment. We have used alkalis for many years and from our own experience have come to the conclusion, voiced by many others, that the patient who is on a proper diet and does not have distress requires very little if any alkali. If, however, as occasionally occurs, some form of postprandial distress develops in spite of the proper diet, an alkali may be used in accordance with the requirements as indicated by the symptoms and a titration of the gastric juice. The old indolent cases or those in which there is continuous secretion and pylorospasm seem to respond better to treatment with alkalis. It is a question whether in this last group of cases with the tendency to recurrence surgical intervention is after all not the best form of treatment. We feel justified in arriving at these conclusions, however, not because of any fear of alkalosis from alkali administration but because the patient gets along just as well without or at best with very little alkali in most cases. Accurate neutralization is unnecessary.

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ABSTRACT OF DISCUSSION

DR. SIDNEY A. PORTIS, Chicago: There are seemingly two schools in the treatment of peptic ulcer. With Sippy and his adherents to the overneutralization of gastric acidity on the one hand, and those adherents of Alvarez who do not believe in alkalis at all on the other, we have two very divergent opinions. I believe that there is a midline course in ulcer management. I feel that alkalis are of definite benefit to the patient, and the question of alkalosis is one of the most important questions that a gastro-enterologist has to meet in the treatment of ulcer. I feel that a carbon dioxide combining power of 75, 80 or 84, even without symptoms, as given in the authors' tables, is definite evidence of an uncompensated alkalosis, and a patient who has that degree of carbon dioxide combining power in the blood should not receive alkalis. I cannot understand how, in some of these cases with a higher reading, there is an acid urine. In my own patients the carbon dioxide combining power is determined on entrance to the hospital, three days after medical management, seven days later, and then every five to seven days during the whole time they are in the hospital. Specimens of the urine are taken on the same day that the carbon dioxide combining power readings are made, and if the carbon dioxide combining powers are above 65, we immediately stop alkalis. If the carbon dioxide combining power rises to 70 or 75, we then resort to rather strict methods in handling the patient. We allow these patients no alkalis at all, and give them physiologic solution of sodium chloride by rectum until the carbon dioxide combining power comes down within normal limits. We also substitute for the ordinary alkalis the triple phosphates of magnesium and calcium, as outlined by Shattuck. Furthermore, if patients with even a low combining power show evidence of albumin and casts in the urine, they do not receive alkalis under any circumstances. Recently we carried out a series of experiments. One of my colleagues treated peptic ulcer according to the usual medical management of ulcer and gave no alkalis. In my service we gave alkalis. We tested the pancreatic activity during the course of the ulcer management at parallel periods. The patients who had no alkalis during the whole course of management did not show any rise in the pancreatic activity,

while the patients who had had alkalis showed a return to normal after three weeks of medication. So we feel that even though alkalis may not have any primary effect on ulcer, they do have effect on the digestive glands and may bring about a return to normal.

DR. A. B. RIVERS, Rochester, Minn.: That an uncomplicated ulcer will heal more readily, or at least will become asymptomatic when the hydrochloric acid content of the stomach is lowered, has been uniformly observed. Practical application of this then seems reasonable. The point emphasized by the authors that one can obtain reduction of gastric acidity by allowing the patient to relax, feeding a proper diet and using little or no alkali seems of great importance and one that should not be overlooked in planning treatment for ulcer. During the last few years we have been using from 30 to 120 grains (2 to 8 Gm.) of alkali a day. This is from one fourth to one sixteenth of the minimum amount used according to the old Sippy regimen. With this method we have had less difficulty controlling or satisfactorily reducing gastric acidity than with the larger dosage and we have seen no serious effects which could be attributed to the alkali intolerance which some patients undoubtedly possess. I doubt that any particular alkali is responsible for the chemical changes in the blood which are observed occasionally. Perhaps depending on its solubility, any alkali can give trouble. There is not much danger ordinarily in using larger doses of alkali, but the fact remains that untoward symptoms may arise. We often see people who carry sodium bicarbonate with them. I have seen several whose symptoms from alkali intoxation were more serious than those caused by the ulcer, and incidentally almost as dangerous. Then, also, patients leaving our care without some warning regarding the use of alkali are apt to use no discretion in controlling the intake of alkali. When 5 or 10 grains (0.32 to 0.65 Gm.) would be sufficient to control their symptoms, they may take a teaspoonful or more and repeat this dose at frequent intervals. Why use large doses of alkalis when smaller amounts will keep the patient comfortable and will keep the hydrochloric acid content of the stomach low or under perfect control? There are some patients in whom it is impossible to control the gastric acidity by small doses of alkali; usually in these patients the gastric acidity is controlled with great difficulty on larger doses. I feel very strongly that the majority of this group are wasting time under a medical regimen and that in these cases surgery will eventually become necessary.

DR. ANTHONY BASSLER, New York: In the routine of handling these patients, while the authors are right in saying that an alkalosis does no definite harm, it is very distressing and some of the patients are very much upset by it. Not infrequently, too, the nurse or some one else tells them what the symptoms are due to, and they are very reluctant to take alkalis afterward. We find that when we use calcium carbonate and oxide magnesium in one powder (which seems to have no definite effect in producing alkalosis as do the powders containing sodium bicarbonate) and use sodium bicarbonate in the second powder, following the p_H of the urine during the time that the patients are in bed, we have no trouble whatever. There is no doubt that too much alkalis are being used, but I agree with the speakers that there are instances in which some doses of alkalis do seem to make a difference in the percentage results in patients in the way of distinct benefit. I do not doubt that when alkalis are employed generally, better clinical results are obtained.

DR. DONALD P. ABBOTT, Chicago: I believe that there is a true danger from alkalosis. When alkalosis is impending, as shown by a rising carbon dioxide concentration, measures should be taken to prevent a further increase in the alkali content. It is my practice to repeat the blood examination at least once in two weeks, starting out with an examination before ulcer management is instituted and making enough tests to be sure that the dosage of alkali necessary to control the free hydrochloric acid is tolerated by the patient. When the carbon dioxide reaches 68 or 70, steps should be taken to prevent a further rise in the blood alkali. The first step is to stop the sodium bicarbonate if it is being used and to increase the calcium carbonate. But even on calcium carbonate, alone, I have seen a few cases of alkalosis occur. I have discontinued the use of sodium bicarbonate in the treatment of peptic ulcer because of the danger of alkalosis and ureteral colic. Second, it may be necessary to stop all alkali, and finally, it may be necessary to use tribasic calcium phosphate. I strongly disagree with the authors' last statement, namely, that the neutralization of free hydrochloric acid is really important in the treatment of peptic ulcer. Why use alkali at all if we do not use it in such dosage as to neutralize free hydrochloric acid and thereby neutralize the effect of pepsin? The whole idea of the neutralization treatment of peptic ulcer is based on the theory that hydrochloric acid lowers the vitality of the granulation tissue that is developing at the edges and the base of an ulcer, and when that vitality is reduced, this tissue is subject to peptic digestion. Pepsin is active only in the presence of free hydrochloric acid. All experimental work with dogs, and all work with human beings, has shown that when the ulcer is bathed for the greatest number of hours with free hydrochloric acid, it is more likely to become chronic. In other words, ulcers near the outlet of the stomach with obstruction, and therefore subject to a longer period of bathing with free hydrochloric acid, are the chronic ulcers. It seems wise to me then, if we are to use alkali, that we should use it intelligently along physiologic lines with the idea of inhibiting the action of pepsin.

DR. A. F. R. ANDRESEN, Brooklyn: There has been so much discussion by clinicians who are using alkali that I believe we ought to emphasize the point that the authors made; viz., that they have found alkali unnecessary and are not using it. I am astounded to find that so many are still using alkali in the treatment of ulcer. I have not used alkali in ten or twelve years and have not had any cases in which I felt that it was at all indicated. I believe that in the neutralization of the acidity and the reduction of the acid secretion, a proper diet will accomplish all that is necessary.

DR. L. C. GATEWOOD, Chicago: We cannot enter into the discussion of the merits and demerits of the alkali treatment because that is too long a story to take up in this brief time. I have seen at least one death directly and unquestionably due to alkalosis. An individual was placed on ulcer management with huge doses of alkali and was not closely watched. When the patient began to have severe symptoms, the physician in charge was away for a few days. The condition was thus allowed to drift along for two or three days before being recognized. The first carbon dioxide determination made at that time showed the blood carbon dioxide to be —140, and in spite of the methods used, which under ordinary conditions will quickly reduce the carbon dioxide, that is, intravenous and subcutaneous injection of chlorides and water, the blood carbon dioxide was reduced only to approximately 100. The blood nitrogen decreased somewhat at the same time but within two or three days the patient was dead. There is no question that patients can be pushed to an exceedingly high nitrogen retention by the continued use of excessive doses of alkali. The work of Dr. Loevenhart particularly shows that it is an excessive dose of alkali that does this, and a point which I think is not generally well understood is the fact that the acid secretion may vary greatly from time to time. Thus a patient at the outset of alkali management may have an acidity which requires fairly large doses of alkali to be controlled; for example, from 30 to 50 grains (2 to 3.25 Gm.) of sodium bicarbonate (or its equivalent in other alkalis) every hour. When accurate determinations are made in such patients week by week and day by day, many are found in whom the acidity decreases progressively, so that it may be controlled on 5, 6 or 7 grains (0.32, 0.40 and 0.46 Gm.) of alkali an hour. In other words, the total amount of acid secreted daily may be only a small fraction of the original secretion, and if the patient is continuing to receive the doses of alkali given in the beginning, it may be only a short time until that patient is receiving an excess of alkali, which may be pushed to a dangerous degree of alkalosis.

DR. LEON BLOCH, Chicago: The spontaneous cure of ulcers observed clinically or as demonstrated at postmortem examination to have recurred in individuals who gave no history of ulcer during life should be sufficient to refute Dr. Abbott's statement of the necessity for a complete neutralization to effect a cure. Bolten states that a reduction of the free acid to 20 can prevent digestion of the mucous membrane. Enormous doses of sodium

bicarbonate, as well as any other therapeutic agent, may produce toxic results. We have not found it either necessary or advisable to produce complete neutralization. We have obtained such neutralization in thirty-two cases with amounts of sodium bicarbonate that produced no untoward results, and have failed to obtain it in twenty-eight cases because of the variability of the acidity with the same amounts of alkali administered, or an inability to do so in spite of the increasing amounts of sodium bicarbonate. The satisfactory clinical course of the condition did not warrant increasing the amount of sodium bicarbonate any further even for the purpose of this investigation. We felt that emphasis on the maintenance of a proper diet was more important than the administration of sodium bicarbonate indiscriminately, even though the diet had to be continued indefinitely. Nausea is a frequent symptom and in our experience has been ascribed more frequently to the high fat diet or even the powders themselves than to alkalosis. It is an old story that high fat diets produce nausea. In reply to Dr. Portis' statement about acid urine, I might refer to what we have already said; namely, that a urine which was acid on the first examination always becomes alkaline soon after large doses of sodium bicarbonate are administered. This does not hold for calcium carbonate in doses of from 2 to 3 Gm. every hour. Patients receiving calcium carbonate showed no increase in the blood carbonates at any time. The amount of calcium absorbed was never sufficient to produce any changes in the blood. I wish to repeat that the satisfaction of appeasing their consciences plays a great part in the use of much alkali by some physicians. In most cases a very small amount or none whatever suffices if a diet is followed conscientiously.

SYMPATHETIC RAMISECTION IN SPASTIC PARALYSIS

A REPORT OF FORTY CASES FROM THE SERVICE OF THE NEW YORK ORTHOPAEDIC DISPENSARY AND HOSPITAL *

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In an article published in 1926 I [1] made the statement that there was no longer any doubt as to the efficacy of sympathetic ramisection in certain cases of spastic paralysis. Two more years have elapsed and in the further follow-up of these cases nothing has occurred to necessitate qualification of that statement.

It need not be argued that any form of treatment which ameliorates the condition of these patients is worth while. The care of those who are mentally impaired may be made easier, and valuable citizens may be made of those who are normal.

Muscular rigidity or spasticity in these cases may be defined as an interference with immediate relaxation in an opposing muscle or group when one has been willed to act. It is this factor which is responsible for the lack of control, for the development of deformities, and for the fatigue which removes the patient with good mentality from useful life.

Treatment which does not reduce rigidity is sharply limited in its result. Ramisection does this. Nothing in the past has even promised it.

Rigidity from a practical standpoint may be considered exaggerated muscle tone. What little is known scientifically of muscle tone today was known intuitively by Galen. That the skeletal muscular system received nonmedullated nerves from the sympathetics was definitely determined in 1902. It had been thought for many years that there was some connection between this system and muscle tone. Recent investigators have arrived at the same conclusion. The work of Royle and Hunter stimulated many others to investigate this subject, but what part the sympathetic system plays in this connection remains a mystery. Their experiments were convincing enough to point the way to clinical results. These results must be explained by investigators even if the experiments cannot be duplicated in other laboratories.

The title of this paper is misleading in that only spastic paralysis in children has been dealt with, and in this group, the large majority of cases are the result of premature deliveries and birth injuries. In nine cases the paralysis seems to have been the result of an illness after birth, and in one case it was probably a residual encephalitic disorder. The two youngest patients were 2 years of age; one had been delivered instrumentally and in the other, birth had been premature. The two oldest were 17; in one, paralysis occurred after birth, and in the other, it was due to a birth injury. Twenty-one were between 4 and 7 years of age. The mentality was good in twenty-five, fair in thirteen and poor in two. The last two were operated on more in an attempt to help the parents than the children. Practically every patient except the four youngest had had some form of physical therapy in addition to coordination exercises. The few who had not been so treated were given a short course of exercise before operation to stimulate their attempts at control. Eight patients had had partial peripheral nerve resections, all of the obturators and five of the nerves to the hamstrings and calves as well having been resected. In one case the obturator nerve was resected in conjunction with ramisection. Eighteen patients had lengthenings of the achilles tendon, eight of these in conjunction with the ramisections. One patient had to have an achilles tendon repaired because some one had done a tenotomy on it. Three patients had knee stretchings at the time of ramisection, and one had a varus foot corrected by subastragaloid arthrodesis. It is said that any operative procedure helps a person with spastic paralysis. Some aid had been given to these patients by both conservative and operative treatment preceding ramisection, but the results were unsatisfactory, as evidenced by their return for further treatment. My feeling now is that except for an occasional tendon lengthening, no further operative treatment will become necessary if ramisection is done before contractures develop and before a spastic habit is firmly fixed.

Except for the two imbeciles, the first twenty patients were selected for ramisection on four considerations:

1. They had little if any impairment of mentality. Of what use would the reduction of rigidity be if the patient had not the intelligence to take advantage of it?
2. There was no block in the will to move, though rigidity might interfere almost completely with the action.
3. They were under 12 years of age because we feared that the habit of additional years might interfere with their results.
4. There was also plastic tone; that is, a delayed return to the point from which a reflex movement was started.

We still insist on the first two requirements. Plastic tone, however, has been found to be a somewhat evasive quality, depending both on the patient and on the examiner, and not really a factor in results, so it has been

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* Read before the Section on Orthopedic Surgery at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

† Dr. Von Lackum died, June 30.

1. Von Lackum, H. L.: Operations in the Treatment of Spastic Paralysis, J. Bone & Joint Surg. 8: 590 (July) 1926.

discarded. Six patients were over 12 years of age, and three of them, aged 13, 16 and 17, are among the most satisfactory of the forty. Lengthening and shortening reactions, that is, the tendency of the limbs to stay in the position placed, were noted but were not regarded as an indispensable indication for the operation.

The operations have been well described by Royle. It need hardly be said that complete operations must be performed to gain results. In the cervical region the exposure must be such as to allow a dry field which includes each of the five roots of the brachial plexus back to their foraminae of exit. The gray rami have no set number or set place to meet the peripheral nerves, and unless the dissection is complete, some of them are sure to be missed. Dr. H. J. Prentiss of the University of Iowa recommends their exposure at the sympathetic chain itself. The lumbar operation is simpler, provided the abdominal muscles are widely detached from the iliac crest and lumbodorsal fascia. Failure to recognize one or more of the components of a chain which is divided into several parts is one of the most likely sources of error. Occasionally, the main portion of the chain lies in the edge of the psoas muscle and could easily never be found. Another source of trouble lies in not getting exposure high enough and thus failing to recognize a large ganglion which may take the place of any real chain below the second or third lumbar vertebra. This is perhaps more likely to happen when the approach is made transperitoneally through the abdomen.

Postoperative treatment consisted of the same course of exercises as used before operation. On one occasion, in a patient with hemiplegia in whom the cervical rami were attacked, the opposite extremity was placed in plaster for a time to enforce use of the affected limb. Several patients came a few times for exercise and then ceased coming, except when especially asked in follow-up.

In judging results, the following points were noted:

The effect on the temperature of the limb. In a general way, this was a fairly accurate gage as to the completeness of the operative procedure, especially in the lower extremity.

The reduction in rigidity or spasticity under active and passive conditions.

The effect on the reflexes; lengthening and shortening reactions; clonus if there was any; coordination, and, finally, function. The latter is the only test with which the patient is concerned.

Twelve patients with hemiplegia have been treated, three having had only the cervical rami divided; three, the lumbar, and six, both. Seventeen patients with paraplegia have been operated on, six having had only the lumbar region on one side treated, and eleven both sides. In six patients with triplegia three bilateral lumbar operations were performed, two single lumbar operations and one lumbar and cervical. Five patients with diplegia have been operated on, three having had bilateral lumbar operations and two right lumbar only. The total number of operations performed includes fifty-four lumbar ramisections, thirty-four of which were bilateral and ten cervical, of which nine were in cases of hemiplegia.

The temperature determinations were made simply by palpation, instruments not being used. Three operations apparently were not complete enough to cause any change in temperature. In all other cases, in which two sides could be compared, there was a definite increase in the side operated on, though in two patients with hemiplegia this was not enough to increase the temperature to that of the normal limbs, the affected side having been very cold before operation. In most cases, but not all, the increase in temperature went hand in hand with increase in function. At first the entire limbs were warmer, but this change after a few months could be felt only in the distal portions. In no case has it entirely disappeared when there was definite change at the time of operation. The upper extremity never showed more than slight change, and one patient, who is vastly improved, showed no palpable change whatever. Determination by palpation is open to criticism.

I have attempted to determine the lessened rigidity at rest and in action. Practically every patient at rest shows a change for the better. This is best demonstrated in bilateral cases in which the conditions were approximately the same before operation. It is understood that spastic patients are supposed to relax to some degree when quiet.

There were twelve patients who failed to show a reduction in rigidity during activity. Six of these had rigidity of the arms, and nearly all were of retarded mentality, one being an imbecile.

Approximately two thirds of the patients, whether normal mentally or not, and whether active or at rest, showed a striking reduction in rigidity. Age plays a part in this, and emphasizes the necessity of early operation, if optimal results are to be obtained.

The reflexes remain hyperactive. The effect on the lag following a reflex action, or so-called plastic tone, was not consistent. When the reflex was present, certain patients lost it entirely and others partially, and some have retained it to a marked degree even when rigidity was markedly decreased. The phenomenon seems too variable to be used in determining results.

Lengthening and shortening reactions were always changed, depending apparently on the completeness of the operation and on the cooperation of the patient. Here again a good mentality enters in. In a few patients, these reactions remained in the forearm and calves when they had entirely disappeared in the proximal portions of the extremities.

True clonus was nearly always lost after operation. It must be differentiated from a clonus due to apprehension, frequently seen in those of retarded mentality.

From a practical standpoint, the one in which the patient is concerned, the results are classified as follows: In the cervical cases, there were two good, two fair, and six poor results. Unless the extremity is definitely more useful to the patient, no matter what the reduction in rigidity might be, the result has been classed as poor. The two patients who obtained good results are able to feed themselves with little effort and can make many of the finer movements, which were utterly impossible before operation. Those with fair results are now able to carry objects and perform grosser movements, all of which were not possible before. The ability to do these things came a short time after operation and cannot be accounted for by the improvement which most of these children show as they grow older.

In the lumbar cases there were ten excellent, twenty-seven good, four fair, and ten poor results. The excellent results were obtained in those who have largely lost their spastic gait and run and skip and play almost as well as normal children. The patients with good results have a definitely spastic gait, but they have been freed from much of the effort which previously was necessary, can walk long distances without fatigue, can per-

form gross movements with accuracy and despatch, and are definitely, while of spastic appearance, placed on a fair footing with normal children. The patients with fair results are those who have been placed on their feet to the extent that they can go to school when this was previously impossible. The results were classified as poor in patients who have not gained any practical assistance by operation, though in some of them much passive rigidity has been lost.

TYPICAL CASE HISTORIES

CASE 1.—D. C., a girl, aged 4 years, born prematurely by instrumental delivery, had good mentality but showed a condition of hemiplegia, with the lower extremity very spastic. Relaxation was poor. She had a typical spastic gait with severe equinus and partial contracture. She had hyperactive reflexes with some lag, lengthening and shortening reaction and occasional clonus. There was no temperature difference. She had had the usual massage and muscle training. Operation, May 13, 1925, consisted of lumbar ramisection together with lengthening of the achilles tendon. She was last seen, May 2, 1928 when the veins of the foot were dilated. Increased warmth was present only in the foot. There was slight spasticity in the foot but relaxation was almost perfect. The reflexes were hyperactive with a slight lag but there was no lengthening or shortening. She roller skates and plays all games with other children and her gait is only slightly spastic. Since lumbar ramisection, she has used the upper extremity well enough to feed herself. This was impossible before.

CASE 2.—G. M., a youth, aged 16, of good mentality, had paraplegia, worse on the right side. When a baby he weighed only 1 pound 6 ounces (0.63 Kg.). He was markedly spastic but had fair relaxation. His gait was typical, with flexed and moderately adducted knees. The reflexes were sharply hyperactive with a lag and slight shortening and lengthening. Clonus was present. He had the usual muscle training, with lengthening of the achilles tendon in 1919. Right lumbar ramisection was done, Feb. 14, 1925, and left lumbar ramisection, March 15, 1925. He was last seen, May 16, 1928, when the veins in both feet were dilated; the skin was dry and the left foot was warmer. There was slight spasticity in the right foot, but none in the left. Relaxation was perfect in the left foot and good in the right. The reflexes were exaggerated, with some lag, especially in the right foot and with slight shortening and lengthening. There was no clonus. The patient walks and runs almost normally. He could only catch a baseball before operation; after the operation, he could run bases. He goes up and down stairs easily and can walk any distance. Formerly, he was tired out after walking a few blocks. The right limb does not move with the full freedom of the left.

CASE 3.—L. A., a girl, aged 11, whose delivery had been difficult, was of fair mentality only, and had markedly spastic paraplegia, with poor relaxation. She had a scissors gait. Her reflexes were greatly exaggerated with marked lengthening and shortening. Clonus was present. She had had coordinating exercises. Left lumbar ramisection was done, June 6, 1924, and right lumbar ramisection, June 17, 1924. She was last seen, June 5, 1928. The right limb was slightly warmer. Rigidity was much less and she relaxed fairly well. She had hyperactive reflexes with much lag and clonus. There was abduction of 30 degrees. She started to school soon after operation, whereas she could hardly stand before. She had knee flexion of from 10 to 15 degrees and a very spastic gait. Her mother did not consider the patient any better. She was classed as having obtained a poor result.

COMMENT

In going over the entire list of cases several striking things are noticed. Two patients had knee stretchings after ramisection had been done on one side only. Under anesthesia, that side relaxed quickly and easily, good correction being gained. Great difficulty was experienced on the side on which ramisection had not been performed, and when the plasters were removed, pressure sores were found on these knees which tended to recur at once, while the other side remained relaxed and corrected. Other patients who had had difficulty in standing on both legs quickly learned after operation to balance on either.

Youngsters who tired in short distances walk any distance now.

Scissors limbs have been changed, without the aid of obturator nerve resection, to limbs that can be well abducted.

Children who were able to move their toes only with the greatest difficulty can move them quite freely now.

Full gymnasium work in the public schools is done now by some of these patients, whereas before operation only a small portion of the exercises could be done.

Several of these patients had walked with bent knees for years but almost immediately after convalescence from operation began walking with straight knees. One patient with cervical paraplegia writes very well with the involved extremity. This had been impossible before operation.

One young child was found holding a toy in its hand two days after cervical ramisection was done, an action it had never made in its life before. Two patients run bases in baseball when before operation they could only bat.

As in other forms of treatment which are helpful, ramisection in one extremity proved an aid to any other similarly affected.

The workers in the gymnasium, the teachers in the schools, and the mothers at home are all convinced of the good that has come to the majority of these patients.

A brief analysis of the poor results brings out the following facts: Poor mentality, and consequent poor cooperation, is the most important factor in failure. Incomplete operations, contractures and deformities are responsible to some degree. Poor follow-up in the gymnasium is another weakness, and age with confirmed spastic habit must be considered in some of the patients. In the cervical cases, use of the affected arm must be enforced. A child cannot be expected to use an extremity which is difficult to use when there is another which is not. There were no bilateral cases in the upper extremities in which similar arms could be compared with and without operation.

It is unfair to expect ramisection to correct deformity or contracture, or to whip up a retarded mind. It is not a cure-all and will fail in most cases to do more than make easier activity in the affected limbs. It will not in these cases destroy a spastic appearance, though it will make it less awkward. It can be expected to prevent contractures and deformities if it is done before these have developed, and, depending to some degree on the patient's intelligent cooperation and the follow-up exercise in the gymnasium, not only good but excellent results may be obtained. Some observers seem to be expecting too much.

Suggestions have been made that any good derived from the operation must come from increased circulation in the part. This is hardly tenable since the increased circulation is gradually diminished during a time when the patient's capacity is being gradually increased. It is also difficult to understand how increased circulation could change the appearance of the reflexes and do away with lengthening and shortening reactions.

Are the results permanent? Most likely, since the patients treated four years ago have not lost any of the benefit gained.

How much of the result is due to the correction of deformity and to partial peripheral nerve resections? Very little, since the best patients are among those in whom nerve section was not done and deformity not corrected, with the exception of an occasional lengthening of the achilles tendon. The good that tendon lengthening alone will do has been considered.

Are the results due to more active postoperative gymnasium therapy? No, since some of the good patients failed to return for this treatment, and in no case has more intensive postoperative than preoperative treatment been used.

In what type of patient does ramisection promise the best result? Young, intelligent children in whom contractures have not developed and in whom there is no pathologic block to cortical control. Patients with hemiplegia and paraplegia offer greater possibilities than those in whom three or four extremities are involved, and the extreme spastic type will hardly do as well as the moderate type. It is surprising, however, what ramisection will do in the extreme type, provided the patient has an intelligent, active mind.

CONCLUSIONS

1. Sympathetic ramisection offers the most effective means of relief in many cases of spastic paralysis in children.
2. Optimal and good results can be obtained only in patients with good mentality.
3. Results cannot be expected in patients with cortical block to activity or in patients with deformity until this is corrected.
4. Treatment for contractures can be avoided if the patients are treated early.
5. The operation is still judged on an empiric basis since basic knowledge of muscle tone and the rôle played by the sympathetic system is lacking.

ABSTRACT OF DISCUSSION

Dr. A. W. Adson, Rochester, Minn.: When attempting to describe the results obtained from lumbar sympathetic ganglionectomy, one is more or less at sea to explain them physiologically. The argument that is advanced today is with regard to the sympathetic enervation of striated muscle: one side holds that there is definite sympathetic enervation; the other side takes the stand that as we are unable to demonstrate the changes, physiologically and experimentally, there is, in all probability, very little influence exercised by the sympathetic enervation. The work of Royle tends to substantiate the theory that striated muscle is influenced by the sympathetic enervation. Kuntz has confirmed the same results, the only criticism being that it is difficult to rule out the influence of the flexors; if they are spastic, they will, in turn, alter the curve. The action current probably will give more information in our attempt to study and obtain these physiologic results. It is barely possible, by the study of reflexes in conjunction with action currents, that we may say definitely that certain results have been obtained by section of the sympathetic. Clinically, something happens in a selected group of patients, and I agree with Dr. Von Lackum that the selection of patients should be followed, at least for the present. Our experience with reference to temperature changes following lumbar sympathectomy has been different from that of Dr. Von Lackum's. The temperature changes have remained permanent following complete ganglionectomy and ramisectomy. Some of our patients have had an increase of from 8 to 12 degrees, existing now for more than three years. I am inclined to think that if one is satisfied with just a division of the rami and allows the sympathetic trunk to remain undisturbed, part of the effect is lost, because the sacral nerves receive their enervation from the sympathetic trunk. I believe in section of the sympathetic trunk. This procedure is not a cure-all; we do not know just how much can be attributed to the nerve section itself and how much to the influence of additional circulation. However, we do know that the operation helps to reduce some of the spasticity and serves as an additional tool in our hands in attempting to help some of these spastic patients who are unable to get about and to carry out finer movements. The result following ramisectomy of the brachial plexus has not been as satisfactory as that in lumbar ganglionectomy and ramisectomy, probably because of the fact that some of the sympathetic flexors of the bracial plexus come from the first thoracic ganglions, or because the enervation may pass from the lateral horn cells directly through the anterior horn group to the spinal nerves, and not through the cervical ganglions. In that event we would be unable to accomplish the result obtained in the lower extremities.

Dr. E. W. Ryerson, Chicago: After witnessing about twelve operations which Dr. Royles performed while in Chicago, I made up my mind that it would not be advisable to attempt any large series of operative cases along these lines until sufficient time had elapsed for a proper evaluation of the results. For more than three years now I have seen a number of the patients on whom Dr. Royle operated. Several of the operations were done with my assistance, so that I felt I could properly perform the operation in case of need. As the years have gone by I have felt less and less inclined to adopt this operation as anything like a standard procedure because it has not seemed to me that the benefit attained by these patients has been commensurate with the severity and difficulty of the operation. In listening to Dr. Von Lackum's excellent summarization of his large series of cases, it has seemed to me that perhaps I was wrong, and that even though the benefit derived by the patients from these operations is unquestionably not great, their condition is so deplorable and so little to be ameliorated by any other form of therapy that I am perfectly willing to admit that possibly we should operate on many more of these individuals. Before this most of us have been guided by Royle's specifications that plastic tone should exist and that the shortening and lengthening reactions should exist. Yet you will note from Dr. Von Lackum's statements that this is no longer a prerequisite in his clinic. The operation in the cervical region is difficult. I attempted one a few months ago and was very much chagrined to find that I could not sufficiently dissect out the sympathetic rami — that all I could do was to clean off the brachial plexus up to the foramina. Although this was done, none of the ordinary changes which one would expect occurred, so I am forced to the conclusion that one must do a better operation than I did in this case.

One of my associates similarly was unsuccessful in the Royle technic and no result has been obtained in that case. I think it takes a very clever operator to do these operations properly. They cannot be done by the average orthopedic surgeon. I think that we should wait another year or so and then hope that some one else will produce a series of cases somewhat resembling Dr. Von Lackum's. Then we shall perhaps be able more positively to advise either for or against the operation. I do not think that the exact status of it is perfectly clear cut at the present time.

Dr. Frank D. Dickson, Kansas City, Mo.: I have never done a ramisection. However, there is one point in the paper which I should like to discuss if I understood it correctly, and that is that operations on peripheral nerves, such as the Stöffel operation, were dismissed lightly if not utterly condemned. I had the opportunity to examine most of the cases in Chicago which Dr. Ryerson has just been speaking of, about a year after the operations had been done by Royle himself, and I was not very much impressed by them. I feel very distinctly that this question of cerebrospastic paralysis is one of doing the best thing for the patient, whether it be a ramisection, a Stöffel operation, or a tenotomy. We must keep an open mind toward all procedures, including ramisection, until time proves or disproves their worth. I feel that the Stöffel operation offers much more than ramisection at this time. Probably the best thing in my own experience up to this time has been the judicious combination of resection of the peripheral nerves plus some tendon transplantations, plus correction of bony deformity.

DR. H. L. VON LACKUM, New York: I should like to add one more thing to what Dr. Adson said about temperature changes. In those cases in which temperature changes occurred, they have remained in the hand or foot but have disappeared from the rest of the extremity. We always section the sympathetic trunk in a lumbar region. As Dr. Ryerson said, one cannot standardize this operation on patients with spastic paralysis. We have done a great many Stöffel operations at the Orthopedic Hospital, but in the type of case I have been talking about here ramisection is much more effective. In one case we did a Stöffel operation on the abductors in conjunction with the ramisection.

DIABETIC CHILDREN*

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Few persons know of what disease their parents and grandparents died. In the case of children all six ancestors may be living or, if they are dead, they may have died long before they reached old age. Therefore, with such a disease as diabetes, which is twice as common after 40 years of age as before 40, the disease may be latent in the ancestor when it has appeared or caused the death of the offspring. Thus, among eighteen diabetic children who had a diabetic parent, there were six instances in which the disease came in the parent after it had broken out in the child. This condition is accentuated in fatal cases of diabetes in childhood, because the average duration of the disease in these children remains 2.4 years, and in this short period the opportunity for it to manifest itself in the parents is slight. Hence, one would expect the lowest incidence of diabetic heredity in the group of children with fatal diabetes, and this is the case. In 201 such cases, it has proved to be 17 per cent.[1] (In the term heredity, both hereditary and familial diabetic tendencies are combined.) In contrast, the heredity among 201 living diabetic children in September, 1926, was 31.8 per cent, but since that date in the same group six new cases of diabetes in their ancestors have been discovered, and now the incidence is 34.8 per cent. Sixteen children have survived the disease ten years and their total heredity is the greatest of all; namely, 44 per cent.

Investigation of heredity in a diabetic child should not end with the first visit. Fresh queries should be instituted with discretion at subsequent visits and the books kept open. Relatives should realize that at least one in three, probably every other diabetic child, and possibly all diabetic children are born with a diabetic tendency. Consequently avoidance of obesity, the best preventive of diabetes that we know, should be practiced by all the relatives of a diabetic child as middle life is approached.

Increased interest in the topic is only partially responsible for the high percentage of heredity among our patients, because in 102 recent cases it was only 32.3 per cent, and this included two instances which developed after the first visit. We have not reexamined all our living patients, and hence all the figures for living children are subject to increase. The chance for increasing evidence of the hereditary character of diabetes in the child grows as his relatives of the preceding generation approach middle life, and in his own generation as he acquires more relatives.

MARRIAGE

Shall diabetic patients marry? Yes, if they have proved themselves masters of their disease and have sufficient funds. Nondiabetic persons with a diabetic heredity are far too common to make interdiction of marriage justifiable. The children of diabetic mothers treated with care during their pregnancy are large, attractive and mentally precocious, as are diabetic children themselves who are reared under good surroundings. Thus far we have not had a diabetic patient that married whose child developed diabetes, but of course such an instance is bound to arise sooner or later.

Perhaps the child of a person with diabetes will make up in mind and physique for his deficient carbohydrate metabolism.

DURATION OF LIFE OF DIABETIC CHILDREN

Physicians must become accustomed to the existence of diabetic children because the death of a diabetic child today is most unusual. Four fifths of our patients in the group of fatal cases (201) died before the use of insulin. On the other hand, in the twenty-two months ending July 1, 1928, there were 303 living patients on our lists. All of these have been traced and the deaths numbered six. In other words, one child in 100 has died each year—a 1 per cent yearly mortality rate. We have good biblical authority for passing over the ninety and nine who lived and for concentrating attention on the single lost sheep. One child that grew up and became a wireless operator died in Argentina of coma or hypoglycemia. We had not seen him for some years and it is doubtful whether he had been under the care of any physician. He went out in a blaze of glory, because in his previous voyage, when the oil tanker was on fire, he stuck to his job to the end.

The second died of bronchopneumonia in California and we are sure under favorable medical surroundings. Two died in New Hampshire, one in Vermont, and one in his home 10 miles from Boston—all of coma, although complicated by disease of the mastoid in one instance. Neglect to follow treatment and to keep in constant touch with the family physician was responsible for at least four deaths. Diabetic coma is needless; it is an accident, and the patients and their families must be taught line on line and precept on precept that, if they allow it to develop and fail to report the first signs of indisposition to their physician, death may occur and through their own fault. Call the physician, go to bed, take an enema, keep warm, take a cupful of warm liquid every hour and be waited on are the A B C rules of the diabetic patient's primer. With insulin, 10, 20, 30 or 40 units every half hour until the urine is nearly sugar-free, with gastric lavage for a dilated stomach, salt solution by rectum, subcutaneously or intravenously, and caffeine for the heart, diabetic coma should be averted or conquered.

The fatal cases are cases of short duration even today. In the last two years only one of the fifty-three patients seen before the advent of insulin died. It is the uneducated, untrained, uncared for child in a family with limited resources who is lost. Every diabetic patient needs some one, a relative or a friend, a "buddy," who will appraise his health each day and when in doubt report him to his family physician.

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* From the New England Deaconess Hospital.
* Read before the Interstate Post Graduate Assembly, Atlanta, Ga., Oct. 17, 1928.

1. Joslin, E. P.: End-Results in Treatment of Diabetes Mellitus in Children, J. A. M. A. 88: 28 (Jan. 1) 1927. A report of 200 living patients. Later another case was discovered, making the series 201 in September, 1926.

Thirteen living patients and three children who died had diabetes for ten years or longer. Ninety-four of the children showed an onset prior to 1923. The average duration of the disease in the 195 living patients seen prior to Sept. 1, 1926, is now 5.8 years. With some trepidation we said about two years ago that the younger a diabetic patient, the greater the expectation of life, but now there is no doubt of it. In Jews and physicians the disease attained its longest duration in our series, and in them it lasted only ten years. The old tenets that diabetes in childhood is either severe or progressive cannot be accepted.

Before the year 1932 there should be in the country as a whole 100 diabetic children in whom the disease is of ten years' duration. One cannot study these children too intensively. The welfare of every diabetic patient is entwined with their welfare. Funds should be sought to care for any of these children in poor circumstances. Their condition and their complications should be reported, because they illustrate a type of diabetes hitherto practically unknown. They are infinitely more valuable for investigation than adults with diabetes of similar duration, because they are untrammeled by the degenerations of mature age.

PRESENT STATUS OF DIABETIC CHILDREN

The diabetic children are in good condition at present, but few in whom the disease is of long duration are sugar-free throughout the entire twenty-four hours. Most commonly glycosuria appears in them after breakfast but clears before noon. Incidentally, the best means to prevent a forenoon glycosuria is to administer insulin an hour before breakfast or, if the urine is not sugar-free on rising, to have the patient take from 2 to 5 units on retiring the preceding night, so that he awakens with glycogen stored in the liver and thus begins the day mildly diabetic. With glycogen in the liver, the diabetes is never severe. Glycogen, not gold, protects the patient with diabetes. Additional aids are a low content of carbohydrate at breakfast and a few minutes of exercise before it.

The canary yellow tint and the lanugo hair have disappeared from the children.

Twelve of the patients are or have been college students and with success.

An insulin refractory diabetic child has not been observed in our series or, so far as we know, been described by others.

Underweight to the extent of 11 pounds (5 Kg.) or more was present in 15 per cent of 256 children for whom our data were considered reliable. Only 2 per cent were more than 20 pounds (9 Kg.) underweight and not one of these has been in the hospital for a year. Altogether there are 33 per cent of the patients who are at least 5 pounds (2 Kg.) below standard, and this present inventory has proved worth while in that it has focused attention on these special children.

Underheight was manifest in 19 per cent (forty-nine) of these cases. In this number are included one pituitary dwarf, several patients in a pretuberculous stage, and in general patients who have not been followed up with care. Today it is the exceptional diabetic child who is underweight or underheight, and when these lowered states of nutrition are encountered they should be combated as vigorously as in the nondiabetic child. It is significant and at the same time reassuring that forty-one of our fifty-one children remaining alive from the Allen era (1914-1922) are of normal weight or above weight for their height. If so large a proportion of the emaciated and underfed preinsulin treated children can attain normal growth, there should be little difficulty for those in whom insulin is given at the outset.

Two questions suggest themselves. Would thyroid medication be useful for those children who are below the average in height? Would it be useful as a prophylactic against arteriosclerosis? On these points we have not had any experience.

METABOLISM

Estimations of basal metabolic rates have been made in eighty-three children. Sixty-two of these were between the ages of 7 and 15. The metabolism averaged plus 6 per cent for the eight between 7 and 9 years; plus 11 per cent for twenty-two between 10 and 12 years, and plus 7 per cent for thirty-two between 13 and 15 years. The sixteen children between 16 and 18 years of age averaged plus 24 per cent and the five between 19 and 21 years averaged zero.

It does not appear, therefore, that the metabolism of the diabetic child is essentially abnormal. It is true that the diabetic child in his later years, from 16 to 18 years, did have an increased metabolism, but this rule did not hold when he was three years older. More studies of the metabolism of diabetic children are needed, just as are better normal standards for comparison. We have used the Benedict and Talbot and the Harris and Benedict standards.

MENSTRUATION

If menstruation is taken as an index of sexual maturity, this as well as physical growth is assured in diabetic children. Of twenty-seven girls for whom the data are available and in whom diabetes began at 12 years or above, catamenia has been established or continued in all save two (93 per cent).

Catamenia has been established also in fourteen (or 40 per cent) of thirty-five girls who have reached the age of 12 years since the onset of diabetes.

Among forty-two girls now over 16 years of age, the data are complete in thirty-four and show that catamenia has been established or continued in 85 per cent. Two of the diabetic girls are married. The former is now three months pregnant; the latter has had one pregnancy which resulted in a premature stillbirth.

COMPLICATIONS OF DIABETES

Cataracts.—Cataracts have not been recognized thus far in the 297 living diabetic children. Two girls with the onset just over the childhood age of 15 years now have double cataracts, and in each instance the diagnosis was made on recovery from coma. It is particularly gratifying that no instance of cataract has been found in the living children who have had diabetes ten or more years.

Arteriosclerosis.—The presence of arteriosclerosis was demonstrated by the roentgen ray in five of twenty-nine of our diabetic children by Dr. L. B. Morrison and Dr. I. K. Bogan. The duration of the disease was five or more years. The evidence was found in the popliteal, tibial or dorsalis pedis arteries. Three of thirteen patients showed the sclerosis between the ages of 10 and 15, and one of twelve children now living between the ages of 15 and 20; one among the four children who lived to be over 20 years of age also showed arteriosclerosis.

A series of twenty-nine nondiabetic patients between the ages of 9 and 30 were examined by Dr. Bogan at the Massachusetts General Hospital through the courtesy of Dr. Holmes. No instance of calcified arteries

was found. All cases of rickets, acute osteomyelitis and, in fact, all cases in which there was a suggestion of calcium deficiency were excluded. Byron Bowen recently told one of us that he had found arteriosclerosis demonstrable by the roentgen ray in a nondiabetic patient 23 years of age.

Four of the positive arteriosclerotic children showed cholesterol values ranging between 102 and 222 mg. per hundred cubic centimeters of blood, the average being 199 mg. Nineteen of the group without sclerosis gave a range in cholesterol between 161 and 435 mg.

A high carbohydrate diet was given to only one of the five arteriosclerotic children. The patient, a boy, had a tuberculous cervical adenitis with a discharging sinus at the time the roentgenogram was taken. One of the patients had chronic diarrhea and one was a pituitary dwarf. In the two remaining there were no complications. None of the five children showed nephritis as determined by urinalysis, the phenolsulphonphthalein test, nonprotein nitrogen determinations, or twenty-four hour renal tests.

Tuberculosis.—In none of the fatal cases in our series did the children die of tuberculosis. With increasing duration of the diabetes, there has been increasing opportunity for the development of tuberculosis. Thirty-nine per cent of the children in whom intracutaneous Pirquet tests have been done have shown positive reactions. One patient had tubercle bacilli in the sputum. Two of the forty-seven patients whose chests have been examined roentgenographically by Drs. Morrison and Bogan exhibit undoubted tuberculosis, and sixteen, or 34 per cent, had been classified as having a suggestive condition. Fitz has shown that tuberculosis in the diabetic adult is an extension from the hilum, and therefore particular attention is being paid to this type of lesion in the child. In the sixteen suggestive cases eight patients have already had diabetic coma and two others have had borderline coma. Is the diabetic patient who has had coma predisposed to tuberculosis, or are not coma and tuberculosis simply signs of neglect of the diabetic child?

CHARACTERISTIC FEATURES OF DIABETES

Overheight.—Overheight at the onset of diabetes is a characteristic of the disease in contrast to overweight in the adult. One of us (P. W.[2]) showed this excess to be on the average $2\frac{7}{10}$ inches for 100 of the diabetic children. Fifty-two additional cases of our series have since been studied. It is with some difficulty that proper cases for inclusion in such an investigation can be found, because either the date of onset of the diabetes is too indefinite or the data at the estimated time of onset are lacking. When heights to the nearest year are used, the average excess of height for these fifty-two patients was $1\frac{8}{10}$ inches. To the nearest three months, the excess is $2\frac{2}{10}$ inches.

Resistance to Infections.—Diabetes invariably is made worse by an infection, but this action is as invariably temporary. Proof is afforded by the mere fact that only one diabetic child in a hundred has died each year. The children have withstood infections of manifold origin, and we know that this is explained by the skilled adjustment of diet and insulin during the periods of the infection. Safe rules at such times for diet and insulin are continuance of carbohydrate, slight reduction of protein, a greater reduction of fat and the administration of insulin every eight, six or four hours in such doses as are needed to hold glycosuria at a low level or to cause it to disappear. In the latter eventuality, which is admittedly hard to attain during an infection, a single dose of insulin can be omitted. In other words, insulin should be given by the hour and not by the day.

Recovery has taken place from the following diseases the number of times indicated: measles twenty-nine, otitis media twelve, pertussis twelve, mumps nine, pneumonia eight, chickenpox seven, abscesses seven, scarlet fever four, and thirty-four other conditions, such as chorea, diphtheria, typhoid and rheumatic fever.

Surgical operations thus far have been performed on one child in five. Eight children have had the appendix removed and thirty-five the tonsils. These figures were obtained even without a special canvass on this point of the children since their last visits, which in many cases were three or four years ago.

Appendicitis is the most dangerous surgical problem in a diabetic child, because it so closely resembles diabetic coma and at times is associated with it. Nausea, vomiting, pain in the abdomen and leukocytosis are symptoms and signs of coma and they may likewise occur in appendicitis. Our rule is to advise operation if in doubt. The patient in diabetic coma should not be allowed to die with pus in the abdomen just because he has coma. If the surgeon will remove the pus, the physician can cure the coma.

The Blood Lipids.—The cholesterol values of the diabetic children were found to be markedly lower than those considered normal for such patients. In seventy-five children the values were below normal in 67 per cent. Fat partition studies have been made in fifty-five cases. These show that a cholesterol determination is a true index of the lecithin and fatty acid as well. With increasing duration of the disease there has been a tendency toward a fall in the cholesterol. Is this due to a deposit of the cholesterol in the arteries, to improvement in the metabolism of the patient, or to the higher carbohydrate in the recent as compared with the former diet and in consequence a lower carbohydrate-fat ratio?

Reactions.—There are plenty of them. They scare the parents, worry the physician, break the morale of the child, and often prevent the maintenance of a sugar-free urine and a normal blood sugar, both of which conditions help toward gains in tolerance for carbohydrate. One should remember that if a child has a reaction he gets more food, and a good many diabetic children want more food. It is astonishing that diabetic children have so few reactions and so seldom simulate them. It simply shows the inherent honesty of childhood. Fortunately, deaths from insulin reactions are almost unknown.

Nondiabetic Glycosurias.—In September, 1926, a report was made on a series of sixty-eight nondiabetic children who had come for treatment of diabetes because of glycosuria. Between that date and July 1, 1928, there have been forty-six additional cases. The following is the present status for the complete series of 114 patients, who were seen over a period of thirty years in practice. There are eight patients with renal glycosuria all of whom are alive, save one who died as the result of a coasting accident. Of twenty-one patients with potential diabetes, all of whom are alive, three have now been reclassified as having true diabetes. There are eighty-four patients with unclassified glycosuria, of whom one has become truly diabetic, one has died, and four are untraced. Thus 106, and possibly

2. White, Priscilla: Potential Diabetic Child, J. A. M. A. 88: 170 (Jan. 15) 1927.

110, of the 114 children have not developed diabetes, despite a former glycosuria.[3] To offset the transfer of nondiabetic patients to the lists of those with true diabetes, there are three true diabetic patients whose condition at present suggests that they should be classed with the nondiabetic children.

CONCLUSIONS

1. In the twenty-two months ending July 1, 1928, the total mortality among 303 diabetic children has been six, or 1 per cent a year. In the six year period between August, 1922, and July, 1928, the total mortality for 337 diabetic children has been thirty-six, or 2 per cent a year.

2. The incidence of a diabetic heredity in a diabetic child increases with the duration of his disease and the number of his relatives. An inherited predisposition existed in 17 per cent of the patients who died; it has already reached 35 per cent among the living and 44 per cent among those children whose disease is of more than ten years' duration. Perhaps all diabetes in children is hereditary. Diabetic children should protect their relatives from the disease. The relatives of a person with diabetes should never be 40 or over and also fat.

3. Coma is still the cause and almost the only cause of the deaths of diabetic children and represents neglect.

4. The present status of diabetic children is good, but the patients in whom the disease is of long duration usually show glycosuria. They mature sexually. Although one third of the patients remain underweight, this is to be attributed as a rule to lack of close supervision, a pretuberculous state, or the onset of diabetes long before the use of insulin.

5. Cataracts are not known to exist among 298 living diabetic children.

6. Arteriosclerosis has been demonstrated by roentgenograms in five of twenty-nine children whose disease is of five years' duration or more. Only one of these five children had been on a high carbohydrate diet.

7. Tubercle bacilli have been found in the sputum of one patient; evident pulmonary tuberculosis was present in two cases, and the chest conditions were suggestive in sixteen cases. Of the latter, one half were neglected because they had had diabetic coma.

8. Overheight at the onset of the diabetes has been demonstrated as varying from 2 7/10 inches on the average for the first series of 100 cases reckoned to the nearest three months to 1 8/10 inches for the second series of fifty-two cases reckoned to the nearest year, or 2 2/10 inches to the nearest three months.

9. Diabetic children resist all types of infections with proper adjustment of diet and insulin. Confusion between the diagnosis of coma and appendicitis is easy and serious; if there is doubt, an operation should be performed.

10. The blood cholesterol of diabetic children is now below rather than above normal. Cholesterol is a true index of the other lipids.

11. Insulin reactions are distressing but almost never fatal; they interfere with the ideals of treatment but are far less frequent than one would expect because of the inherent honesty of childhood.

12. A child with glycosuria, once carefully diagnosed as being nondiabetic, thus far appears to conform to that diagnosis in the vast majority of instances.

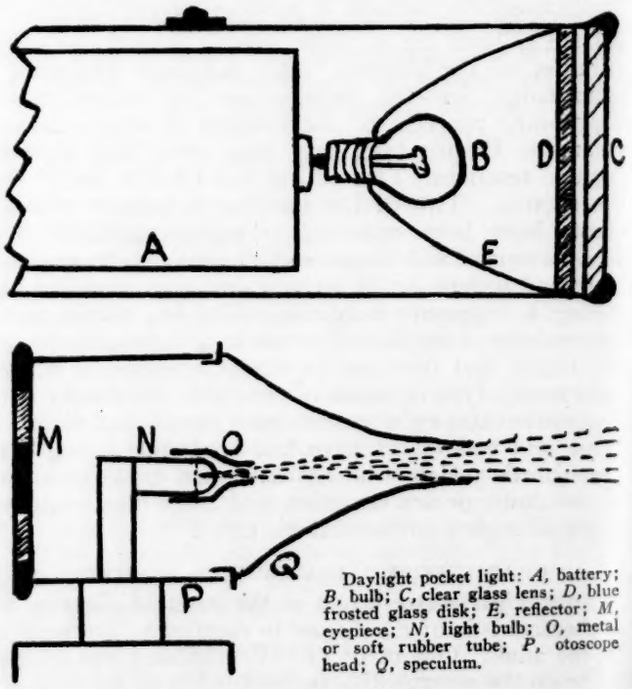
3. In this group by error one case of diabetes insipidus was originally included and is still listed in order to show conformity to previous data.

Clinical Notes, Suggestions and New Instruments

AN IMPROVEMENT FOR OTOSCOPES: A "DAYLIGHT" POCKET LIGHT *

A. ROBERT BAUER, M.D., PHILADELPHIA

There are several otoscopes on the market which employ for their illumination a small incandescent lamp placed directly in the head of the scope which projects its light into the ear speculum. The light rays emanating from this lamp are not focused to fall only on the area that is to be illuminated. Instead, they radiate in all directions, causing many of the rays to be reflected back into the eye of the examiner. This is a great disadvantage because it makes the light that reaches the tympanic membrane seem relatively less intense than it would if the field of the inside of the speculum were dark. To correct this, I suggest placing a small tube of dark metal over the end of the light bulb so that the rays leaving it will form a beam so narrow that they will pass through the small end of the speculum without striking the sides. This will leave the sides



Daylight pocket light: *A*, battery; *B*, bulb; *C*, clear glass lens; *D*, blue frosted glass disk; *E*, reflector; *M*, eyepiece; *N*, light bulb; *O*, metal or soft rubber tube; *P*, otoscope head; *Q*, speculum.

in total darkness and will give a much clearer view of the tissues examined. In case the metal tube cannot be easily procured, a piece of soft rubber catheter (16 French) about three-eighths inch long slipped over the end of the bulb will do. Because of its thickness, the rubber will slightly obstruct the view, and for this reason it is not as satisfactory as the thinner metal.

It is generally conceded that daylight is better for throat examinations than artificial light. Such light, however, is not always available and one is forced at times to use artificial light, usually in the form of a pocket flash. To render this kind of illumination as nearly like daylight as possible, I placed a disk of frosted blue glass between the light bulb and the lens of an ordinary pocket flash light. The blue glass (the kind used in microscope illuminators) shows the colors of the mucous membrane as they appear in daylight. The frosting of the glass gives a diffuse light which eliminates glaring reflections that are sometimes mistaken for exudate when an intense focused light is used. I have found this light to be especially useful in revealing Koplik's spots in measles.

Department of Pediatrics, University Hospital, Thirty-Fourth and Spruce streets.

* From the Department of Pediatrics, University of Pennsylvania School of Medicine.

Special Article

NARCOSAN FOR DRUG ADDICTION

REPORT OF THE MAYOR'S COMMITTEE OF NEW YORK ON DRUG ADDICTION

ALEXANDER LAMBERT, M.D., CHAIRMAN
NEW YORK

Since May, 1928, a study of drug addiction has been going on at Bellevue Hospital, under the supervision of a committee composed of:

ALEXANDER LAMBERT, M.D., Chairman.
STANLEY R. BENEDICT, Ph.D.
MENAS S. GREGORY, M.D.
THOMAS A. MCGOLDRICK, M.D.
ISRAEL STRAUSS, M.D.
LINSLY R. WILLIAMS, M.D.
GEORGE B. WALLACE, M.D.

ADVISORY MEMBERS

MATTHIAS NICHOLS, M.D.
SHIRLY W. WYNNE, M.D.

This committee was appointed by Richard C. Patterson, Jr., commissioner of the Department of Correction, with the approval of Mayor Walker of New York.

The problem of withdrawal of the drug from the addict came up for early consideration, as a large number of addicts receive court sentences and in stopping the taking of the addiction drug there was no practical method of treatment of the withdrawal symptoms which had received general approval. Although the committee has not completed its study of this phase of its work, the therapeutic effects of several of the so-called specific treatments of drug addiction have been thoroughly investigated. Among these is the treatment having as its basis a substance called Narcosan. In view of the newspaper publicity given this treatment it has seemed desirable to record now the conclusions reached after an extensive study of its usefulness.

It may be pointed out that the true evaluation of any special measure of treatment in drug addiction is a matter of great difficulty, and especially so in the case of addicts forcibly detained in prisons or other institutions. They do not offer any cooperation and they make use of every subterfuge to obtain the drug of addiction or to hasten their discharge. As a result of these and other circumstances, many commendatory but misleading articles on various treatments have been published in which the data were not obtained by the writers themselves but from the statements of the addicts, nurses and orderlies or physicians in charge, not sufficiently trained for this work.

In the Bellevue Hospital study a special ward of seventeen beds was turned over to the committee and no visitors were allowed admittance. The work was done under the direct supervision of Dr. Charles Schultz of the Psychiatric Division of Bellevue Hospital, who was assisted by Dr. B. B. Raginsky, both of whom gave their entire time and attention to it. The nurses and orderlies were selected with the greatest care. As a rule not more than five, and usually only two, patients went through the withdrawal stage at one time, and this allowed of constant observation.

The drug addictions here dealt with were those of morphine and heroin.

The marked variations in the intensity of withdrawal symptoms in different individuals are well known. Thus one patient may undergo an abrupt withdrawal with little distress, another may present a picture of great suffering or even of danger to life. In treating a limited number of addicts, these variations often give rise to a mistaken conclusion as to the efficacy of any particular form of treatment. In order to obviate this possibility, the symptoms occurring in 100 addicts during an abrupt withdrawal stage in which only very general measures were employed in treatment were carefully recorded and studied. Of the numerous symptoms noted, seven were selected as being most representative of the distress of the patient. These were: (1) mental and physical restlessness, (2) muscular twitchings, (3) nausea and retching, (4) vomiting, (5) diarrhea, (6) abdominal cramps and (7) prostration. The occurrence of any or all of these and their relative intensity were recorded for each of the 100 control cases and through the composite of these a clear-cut picture of withdrawal symptoms was obtained for a basis of comparison with specific treatments.

The Narcosan treatment was given to sixty-eight patients. Narcosan was administered in the following manner: The contents of one ampule were injected every four hours for the first twenty-four hours and every six hours for the following seventy-two hours. The injection itself produced a local burning sensation to which practically all the patients objected.

The results were clear cut. In the Narcosan-treated group there were noted a greater occurrence and intensity of all the symptoms mentioned. Taking an average of the sixty-eight Narcosan-treated cases and comparing this with the average of the control cases, there was found in the former a more marked restlessness and muscular twitching, and particularly a greater intensity in the gastro-intestinal symptoms, vomiting, diarrhea and cramps, and in general prostration. In short, the symptoms occurring in patients receiving Narcosan were more severe than in those not receiving Narcosan. Further, in regard to recuperation after the withdrawal period, the Narcosan-treated patients did not show any advantage over the controls.

The statement has been made that the administration of morphine to a patient undergoing Narcosan treatment is a dangerous procedure and may even result in death. This statement is incorrect because in a number of instances Narcosan-treated patients were given morphine on account of an alarming prostration that occurred, and the relief was immediate and no harmful effects of any sort could be detected. The results reported here show clearly that Narcosan has no merit as a specific treatment of drug addiction.

The Disabled Mendicant.—In certain provinces of China, persons who become permanently disabled are immediately beheaded. They are a crude and heathen nation. In civilized Christian America, we abhor taking human life. Yet, in many localities, we wall disabled persons in a narrow world by employment prejudice and ignorance. They are jealously guarded by bugbears of "added industrial hazards" and "second injury clauses." The Chinese mercifully take their lives. We allow them life but stultify their ambitions and minds by condemning them to beggardom and dependence. We gradually crush and kill their souls by damning them to lives of inactivity. The results are similar. The difference is in technic. Against this latter practice, the federal government and forty-one states are directing a program for the rehabilitation of disabled civilians.—Jewell, J. R.: Why Blame the Mendicant? *Rehabilitation Review*, October, 1928.

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SATURDAY, JANUARY 12, 1929

UPPER INTESTINAL OBSTRUCTION

Intestinal obstruction has long presented a series of complicated problems alike to the clinician and to the experimentalist in the laboratory. Persons suffering from even uncomplicated obstruction of the small intestine rarely survive unless surgical intervention takes place. A recent reviewer [1] has therefore asked anew why it is that a simple obstruction of the large intestine is compatible with life for a long time, while obstruction of the small intestine is rapidly fatal. The attempted answers to this question have been varied since it was first subjected to rigorous scientific analysis thirty years or more ago. Each succeeding formulation has failed to satisfy the requirements of an adequate solution, though it has often disposed of some debated assumption or physiologic fallacy.

Cooper [1] has attempted, in his studies in the department of surgical research at Cornell University Medical College in New York, to sift the established facts from the fancies. He points to certain clinical features and pathologic observations that are well known. The important long known fact is that simple obstruction of the duodenum at a point just below the openings of the pancreatic and common bile ducts causes the most acute onset of symptoms and the earliest death. The length of survival and the acuteness of symptoms produced at other points in the small intestine is proportional to their proximity to this point. If there is an interference in the circulation at the point of obstruction (i. e., strangulation), the picture is much more acute and death much more rapid. Material exhibiting toxic properties often may be removed from the intestinal content above the obstruction or from a strangulated loop. The "normal" content of the bowel exhibits little if any toxicity when tested similarly by injection into animals. Indeed, large amounts of the toxin-bearing substance may be introduced into the lumen of the normal small intestine without untoward results. Furthermore—and this deserves emphasis in the light of the early claims that septicemia plays a part in the picture—death in high obstruction, closed loops and strangulation can occur without bacterial infection of the peritoneum or blood stream.

There has been a further shift of interest as the outcome of investigations directed to changes in the inorganic constituents of the blood and the conditions dependent on them. This was clearly indicated in the discussions of the subject during the symposium on intestinal obstruction at the Minneapolis session of the American Medical Association.[2] Haden and Orr have long stressed the lowering of blood chlorides in the conditions cited and insisted on proper restitution of the chloride level in procedures directed toward relief of the symptoms. Water and chlorides are often lost in unsuspected amounts through loss of digestive secretions in vomiting and diarrhea; and when the fluid content of the body is restored by the administration of water alone or dextrose, there is a tendency for the electrolyte concentration and consequent osmotic pressure of the blood to fall to a subnormal level. In other words, something more than water alone must be replaced to restore the disturbed equilibrium in the circulating medium of the body.[3]

Dehydration, one of the features noted in intestinal obstruction, is regarded by McIver and Gamble [2] as the result of the loss of electrolytes; and an important corollary of this view is that dehydration cannot be repaired by the administration of water alone: an attempt to restore and sustain the original volume of the blood plasma and of the interstitial body fluids must include replacement of the lost electrolytes. According to Gamble, it is theoretically conceivable that loss of sodium rather than loss of chloride ion is the significant factor in determining the extent of dehydration, since the loss of chloride ion is compensated for within the body fluids by a corresponding increase of bicarbonate ion.

According to McIver and Gamble it is an "acceptable surmise" that dehydration and distortion of acid-base structure can be regarded as sufficient cause for the symptoms and ultimate death occurring in pathologic conditions in which the significant feature is a continued loss of digestive secretions. To the Boston investigators the fatal effects of loss of the digestive secretions, such as occurs in simple pyloric or upper intestinal blockage, are the result of extensive withdrawal of inorganic substances, chiefly the sodium and chloride ions, from the blood plasma and the interstitial body fluids. This simple explanation is to their minds so sufficiently indicated by the data at hand as to make unnecessary the hypothesis of a toxin absorbed from the gastro-intestinal tract or of the loss in the digestive

1. Cooper, H. S. F.: The Cause of Death in High Obstruction, Arch. Surg. **17**: 918 (Dec.) 1928.

2. Foster, W. C.: Intestinal Obstruction, J. A. M. A. **91**: 1523 (Nov. 17) 1928. Orr, T. G., and Haden, R. L.: Toxemia of Intestinal Obstruction, ibid., p. 1529. McIver, M. A., and Gamble, J. L.: Body Fluid Changes Due to Upper Intestinal Obstruction, ibid., November 24, p. 1589. Discussion on Intestinal Obstruction, ibid., p. 1592.

3. In this connection the paper by McKim Marriott and A. F. Hartmann on Newer Aspects of Acidosis (J. A. M. A. **91**: 1675 [Dec. 1] 1928) is of decided interest.

secretions of some vitally important organic substance. Nevertheless, the toxemic features need not yet be dispelled without some further thought. The known varieties of intestinal obstruction are too diverse to be dismissed offhand with a simple remedial prescription. There still are mysteries to be solved.

THE EXCRETION OF CREATINE AND CREATININE BY WOMEN

Ever since the introduction of a rapid accurate colorimetric method by Folin in 1904 for the estimation of creatinine in the urine, this nitrogenous excretory product has been the subject of extensive investigation and physiologic speculation. It is well established that creatinine is an end-product of endogenous protein metabolism, though the precise precursors and the processes whereby it arises in the body when there is no intake of creatine or creatinine remain to be definitely demonstrated. Several features of decided interest have become familiar. The foremost of these is the constancy of the endogenous creatinine output. Despite wide variations in the nitrogenous intake ranging between such extremes as 5 and 20 Gm. a day in a creatine-free and creatinine-free diet, the quantity of creatinine eliminated in the urine ordinarily shows insignificant variations from day to day in the same person though it varies with different individuals. The number of milligrams of creatinine excreted in the urine in twenty-four hours per kilogram of body weight is called the creatinine coefficient. In men, the creatinine coefficient may vary between 18 and 32, with an average of about 24 or 25. In women, lower values are the rule, the average being about 18, with a normal range of between 9 and 26. Children have even lower values, ranging between 9 and 17 at from 5 to 13 years.

A second feature of interest lies in the occasional appearance of creatine in the urine, apart from any source in the diet. Adult men living on a creatine-free diet do not normally excrete unaltered any of the creatine circulating in their blood; yet creatine is a regular associate of creatinine in the urine of children and is occasionally present, as an evidently physiologic constituent, in the urine of women. There are known, moreover, many conditions, experimental or pathologic, by which creatinuria may, in either sex or at any age, be induced or increased.[1]

As has been pointed out anew by Hodgson and Lewis,[2] the suggestion presents itself that the difference in creatine excretion of men and women may be due to muscular rather than to sexual variation; that women with well developed and well conditioned musculature may not exhibit any creatinuria, and that women whose creatinine metabolism is comparable to that of men may also have a similar metabolism of creatine. Consequently, experiments[2] were conducted at the University of Michigan Medical School in Ann Arbor to determine the creatinine excretion and the frequency of creatinuria in young women whose muscular development might be expected to be higher than that of the average woman, perhaps more nearly comparable to that of men. The subjects were fourteen college girls, who were interested in professional training in physical education, who had a history of vigorous physical activity, and who at the time of the studies had from two to four hours of such activity a day. The examinations demonstrated creatinine coefficients of the same order of magnitude as those of men. In other words, in view of the superior physical development of the subjects of this study, the results tend to support fully the theory that urinary creatinine is independent of sexual variations per se and is an index of the proportion of muscular tissue to total body weight. The coefficients were apparently not affected by the phases of the menstrual cycle.

The Michigan biochemists found the usual incidence of creatinuria in the sturdy women they examined. They concluded, therefore, that creatinuria of women is not a consequence of poor muscular development and a lower "saturation point" of the muscles for creatine and that a higher creatinine coefficient is not associated with an absence of creatinuria. As Hodgson and Lewis noted, the frequency of creatine excretion in the urine was similar to that usually observed in women, indicating that creatinuria in women is probably not related to the difference in muscular development between men and women.

1. A detailed discussion of this and related aspects of the physiology is given by Hunter, A.: Creatine and Creatinine, London, Longmans, Green & Co., 1928.

2. Hodgson, Pauline; and Lewis, H. B.: Physical Development and the Excretion of Creatine and Creatinine by Women, Am. J. Physiol. 87: 288 (Dec.) 1928.

PROGRESS IN THE STUDY OF CANINE DISTEMPER

Some years ago an intensive study of distemper was started under the auspices of the Medical Research Council and the English periodical *Field,* representing owners of dogs. A report on results of this work has been published by Dr. P. P. Laidlaw and Mr. G. W. Dunkin[1] which is certain to receive much consideration.

The earlier workers on distemper labored under the disadvantage of not knowing whether dogs selected for experimental inoculations were immune from having had the disease and also in not being able with certainty to prevent incidental infection with distemper during the course of their experiments. It hardly needs to be stated that distemper is a highly infectious and widely spread disease; in view of this fact, however, the first objective in the plans of the English workers was to breed dogs under such conditions that all contact with distemper would be excluded. This was accomplished by isolation and an elaborate aseptic technic of feeding and handling the dogs, compared with which the preventive methods in our best hospitals for infectious

1. Laidlaw, P. P., and Dunkin, G. W.: Field, Nov. 29, 1928, p. 855. Prevention of Canine Distemper, Brit. M. J. 2: 1100 (Dec. 15) 1928. The report is discussed in the London Letter, this issue, p. 158.

diseases seem crude and imperfect. To prevent fly-infection, screening was used; and to prevent air-infection, it was determined that the kennels concerned must be from 15 to 20 yards apart.

Having accomplished the breeding and maintenance of a stock of susceptible dogs, the experimenters were in a position to study pure distemper. In brief, the results of this study show that simple, uncomplicated distemper is caused by an ultramicroscopic and filtrable agent that is present early in nasal discharges and in the blood. The infected animal is infective even before any symptoms are manifest. Experimental distemper, produced by injecting a small amount of blood or tissue from a diseased animal, is in the dog an acute disease with only few deaths; after an incubation of about four days coryza appears, the temperature describes a diphasic curve, inflammation of the respiratory tract sets in, and occasionally encephalitis—"fits." Bronchopneumonia and other localized inflammations are not essential to distemper but result from secondary bacterial infections. In reading the report on experimental distemper as compared with the variegated manifestations of the more destructive natural disease, one feels that epidemic human influenza in many ways is similar to distemper.

In working out the uncomplicated course of simple distemper and its immunity, Laidlaw and Dunkin found the ferret a most useful animal. The ferret, which breeds rapidly even in confinement, is highly susceptible to distemper; and, as the attack is nearly always fatal, it is quite unusual to run across a naturally resistant ferret. But a ferret that does recover from distemper has been found to be immune to all available strains of the disease; as this is true also of the dog, the indications are that distemper is a distinct entity. So far all attempts to grow the infecting agent outside the body have failed; nevertheless Laidlaw and Dunkin have made important advances in protective inoculation against distemper. They found that in ferrets at the height of the disease the spleen contains enough of the infecting agent to act as a vaccine. First a suspension of splenic pulp previously treated with formaldehyde is injected and, fourteen days later, a quantity of living virus containing approximately 100 fatal doses for a fresh animal. These two injections induce a solid and lasting immunity in ferrets, but the ferret vaccine does not seem to be sufficiently potent for dogs. Vaccines prepared in the same way from tissues of dogs with distemper are, however, effective, and dogs are immunized by a subcutaneous injection of dog tissue vaccine followed a week or so later by injection of living virus. Dogs immunized or vaccinated in this way resisted large doses not only of one strain, but of all strains of distemper that could be tried, and remained uninfected on close contact with the natural disease in an acute form. What is more, this method of prevention is giving uniformly good results in private kennels under properly controlled tests. The preparation of specific vaccine from the spleen and other tissues of infected animals is of special interest as the method may be applicable to other infections. The English investigators also mention a promising antiserum obtained by injecting large quantities of virus into animals that have recovered. It is suggested that this serum may prove of value in the treatment of the disease as well as in possible serum-virus prophylaxis.

While full and practical control of distemper may require the discovery of methods for the cultivation of the virus outside the body, the results of the English cooperative attack just reported are highly significant. Through improved methods of experimenting, progress has been made in the knowledge of the nature of distemper and in power to control it. At the same time new ways of attacking other infections, human as well as animal, are suggested.

Current Comment

UNDULANT FEVER: AN OCCUPATIONAL DISEASE

Undulant fever, the malady produced specifically by *Brucella melitensis,* can no longer properly be labeled by reference to a restricted geographic area. The various former designations of the adjectives Mediterranean, Malta, Neapolitan, Gibraltar or Danube to characterize the febrile condition, usually spread by goat's milk, have lost their appropriateness. The records of more than 200 accurately diagnosed cases in Denmark in a single year [1] and of eighty-three well established cases in a single Western state in the United States [2] make reference to European loci appear like an invidious distinction. Even the goat need no longer bear the opprobrium of being the sole, if indeed it now is a prominent, conveyer of the infecting microorganism. The discovery and appreciation of the widespread distribution of undulant fever is due in part to the intelligent employment of serologic tests in the official laboratories charged with examination of blood from febrile patients, notably in relation to the Widal test for typhoid infection. The growing institution of bacteriologic examination of the blood has also helped; so that today, on the basis of this clinical, serologic and bacteriologic evidence, it is felt that there can be little possibility of error in the diagnoses. Referring to the cases in Iowa, the state epidemiologist [2] alleges that there is no evidence which suggests that any of the cases were acquired from goats, sheep or horses. Few goats are kept in the state—so few that in the census record they are included with the sheep. In only two cases had there been even remote contact with goats. On the other hand, there are indications that in many persons the infection was acquired from cattle. This evidence includes the history of dairy herds, serologic examination of cattle, and the absence of any other probable source. In obtaining the history

1. Madsen: Epidemiological Report 114, May 15, 1928, issued by the Health Section of the Secretariat of the League of Nations.
2. Hardy, A. V.: The Epidemiology of Undulant (Malta) Fever in Iowa, Pub. Health Rep. **43**: 2459 (Sept. 21) 1928.

of the dairy herd, attention was given to abortions, retained placentas and sterility. One or more of these conditions occurring in several animals in one year, or repeatedly for a period of years, was regarded as presumptive evidence of the presence of infection with *Brucella melitensis*. Any history of even one of the three conditions was regarded as suggestive. According to Hardy,[2] the prevention of undulant fever, occurring largely on the farms, in small towns, or among packing-house workers, evidently will be dependent on the control of the infection in animals and precautions on the part of those handling infected stock. Another aspect has been presented by the circumstance that a number of packing-house operatives have become infected under circumstances that tend to incriminate their vocation. The government expert is accordingly inclined to designate the infection in such instances as an occupational disease. The far reaching significance of this will be appreciated by all who have to deal with the problems of workmen's compensation.

MODIFICATIONS OF NATURAL IMMUNITY

Discussions of infectious diseases frequently indicate that the actual production of disease depends fundamentally on the interrelationship between the infectious agent and the invaded body. Every infectious disease is the result of a struggle between two variable factors —the pathogenic powers of the bacteria on the one hand, and the resistance of the subject on the other, each of these again modified by variations in the conditions under which the struggle takes place. Thus, as Zinsser points out further, a given micro-organism may be capable of causing fatal infection in one person but may be only moderately virulent or even entirely innocuous for another. Medical attention is usually so exclusively engrossed by consideration of the microbiotic enemy that adequate thought is not given to the factors inhibiting the invader. From the standpoint of prophylaxis in particular, physicians may overlook the observations that the resistance of the host may somehow at times be decreased in general by bodily fatigue, exposure to heat and cold, poor hygienic surroundings, deleterious atmospheres and unsuitable food. This is only a partial list of the factors occasionally operating against resistance. An impressive illustration of the influence of diarrhea on the natural protective power of the gastro-enteric tract has lately been furnished by Arnold and Hull[1] of Chicago. Their attempts at implantation of foreign micro-organisms such as *Bacillus prodigiosus* in young dogs varied in success, depending on the purity of the water ingested. Under the uncomfortable conditions of artificial warmth (90 F.) and extreme humidity (from 85 to 90 per cent) there was an interference with the usual intestinal bactericidal power. This was most marked when polluted Chicago river water was given in place of sanitary tap water. The effect was accentuated when alkalis were administered in a concentration sufficient to cause semisolid stools. The self-disinfecting power of the bowel was inhibited during such experimental diarrhea. According to the Chicago bacteriologists, under such conditions ingested bacteria are not destroyed in the usual manner. This would increase the hazard of infection if pathogenic bacteria were ingested during this period. There is a gastro-intestinal irritant in polluted water. Water-borne outbreaks of diarrhea in human beings following a pollution of the drinking water supply are well known. Chronic biliary typhoid carriers may be made large reservoirs of *B. typhosus* as a result of an attack of diarrhea. Epidemics of typhoid following a large water-borne diarrhea outbreak may be due to disturbances in the equilibrium between parasites and host, namely, to increase in the distribution of *B. typhosus* and increase in the susceptibility of the host. Resistance, immunity and susceptibility are, after all, only relative terms.

1. Arnold, L. L., and Hull, T. G.: Influence of Diarrhea on Gastro-Intestinal Autodisinfection, Proc. Soc. Exper. Biol. & Med. **26**: 159 (Nov.) 1928.

NARCOSAN AND DRUG ADDICTION

Under the same title as that heading this comment, THE JOURNAL more than two years ago (Dec. 18, 1926) published an editorial comment on the remedy "Narcosan," which was being exploited for the treatment of drug addiction. It was brought out that the product was the "discovery" of one A. S. Horowitz, who came to the United States in 1913 and had been more or less continuously identified with attempts to promulgate cures for all sorts of disorders. There was the Horowitz-Beebe treatment for cancer known as "Autolysin," there were the Merrell Proteogens for the treatment of practically everything, and, finally, there was Narcosan, originally brought out about 1920 under the name "Lipoidal Substances." The reason for THE JOURNAL's comment in 1926 was that an article had just appeared in the *New York Medical Journal and Record* on the subject of Narcosan. The paper had previously been submitted for publication to THE JOURNAL and was rejected. The product known as Lipoidal Substances had not been accepted by the Council on Pharmacy and Chemistry, because the product was of unestablished composition and the clinical reports were not convincing. Simultaneous with the publication of the article in the *New York Medical Journal and Record* there appeared a highly exaggerated statement issued by the North American Newspaper Alliance, and published in various newspapers throughout the country. Since that time a further sensational newspaper article on Narcosan has been issued by Famous Features Syndicate, Inc. In view of all this, readers of THE JOURNAL will be interested in the special article that appears on another page in this issue. It is in the nature of a preliminary report of the Mayor's Committee on Drug Addiction of the City of New York. The further fact that this report is signed by the chairman of the committee, Dr. Alexander Lambert of New York, gives added interest, as Dr. Lambert was one of the authors of the paper favoring Narcosan that appeared in the *New York Medical Journal and Record* in 1926. The willingness to admit error on the basis of new controlled evidence is the mark of the true and broad-minded scientist. The committee's report is summed up in the closing clause: "Narcosan has no merit as a specific treatment of drug addiction."

Association News

MEDICAL BROADCAST FOR THE WEEK

The American Medical Association Morning Health Talks and Evening Health Hints from Hygeia

The American Medical Association broadcasts daily at 10 o'clock in the morning, central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week of January 14 to 19 will be as follows:

January 14. "Washington and Lincoln and the Outdoor Life," by Dr. R. G. Leland.
January 15. "Cancer," by Dr. John M. Dodson.
January 16. "Cancer," by Dr. John M. Dodson.
January 17. "Medical Paths and By-Paths," by Dr. R. G. Leland.
January 18. "'Patent Medicine' Secrecy and Mystery," by Dr. Arthur J. Cramp.
January 19. "Medical News," by Dr. J. F. Hammond.

Evening Health Hints from Hygeia at 8 o'Clock, Central Standard Time

January 14. Chilblains and Frost-Bite.
January 15. Feeding the Family Properly.
January 16. What Does One Do for Pimples.
January 17. Rules for Users of Gas Stoves.
January 18. What to Do for "Sick Headache."
January 19. Why Drink Milk?

THE PORTLAND SESSION

Exhibit by Section on Dermatology and Syphilology in the Scientific Exhibit

The Section on Dermatology and Syphilology has appointed the following members of the Committee on Section Exhibit: C. W. Finnerud, Chicago; John H. Labadie, Portland; H. E. Michelson, Minneapolis, and F. D. Weidman, Philadelphia.

This committee announces that the Section on Dermatology and Syphilology will again be represented in the Scientific Exhibit at the Portland, Oregon, Session. In previous years the subjects covered were cancer, syphilis, fungous diseases, granulomas of the skin, excepting syphilis, and some miscellaneous topics. The subject this year will be "The Relation of Dermatology to Systemic Conditions." The scope of the subject is most extensive, but nevertheless the committee desires a large number of photographs and other material from as large a representation as possible in order to make the exhibit as cosmopolitan as it should be. The subject is so large that it is hoped sufficient material will be offered to enable the committee to extend the exhibit over two or even more years.

The members of the specialty are requested to take inventory of materials that might be exhibited and communicate with Fred D. Weidman, M.D., Medical Hall, Thirty-Sixth Street and Hamilton Walk, Philadelphia. A circular letter giving information concerning this exhibit, together with the usual application blank, will be sent to all those who have registered in the section during the last five years. Those who have not registered in this section but who are interested in such an exhibit may obtain a circular letter and application blank by sending the request to Dr. Weidman.

Preventive Medicine and Longevity.—Periodic health examination is the outgrowth of the modern idea of preventive medicine. It is the doctor's business not only to make his patient well but also to keep him well so far as is possible. The human body is like an automobile. Some cars are made of good material and some of poor material. The life of the car depends on the material of which it is made and on the manner in which it is driven. So with the human machine. Longevity depends on heredity and on the individual's manner of living. Many of the diseases of middle and old age are slow in their development. When developed, they can rarely be cured. They can often be prevented or deferred if discovered and properly treated in due time.—McWhorter, W. B.: Health Examination of the Ear, Nose and Throat, *J. South Carolina M. A.*, November, 1928.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

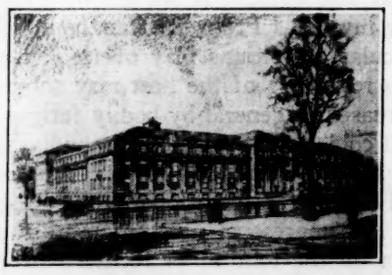
ARIZONA

Dedication of Hospital at Tucson.—The U. S. Veterans' Bureau recently dedicated its 261 bed tuberculosis hospital at Tucson. At the ceremony, Brigadier General Hines, director of the bureau, stated that the temporary hospital which had been at Tucson had demonstrated the need for a permanent institution, even though most of the demand for facilities came from without the state of Arizona. The new hospital is on a 114 acre tract which was donated by the Tucson chamber of commerce. The architecture is of Spanish Mission style with wide porches, overhanging tile roofs, shaded gardens, high ceilings and recreation areas. The number of patients from Arizona in all veterans' hospitals on June 30, 1928, was 211, about 73 per cent of whom are in hospitals in the state. The Arizona patients are classified as tuberculous, 122, psychotic, twenty-three, nervous, five, and general medical and surgical, sixty-one. General Hines stated that 2,726 veterans of the war whose home address was Arizona are receiving compensation from the federal government. The total amount disbursed to date in compensation for disability or death, exclusive of insurance, to all veterans was $1,249,896,739; in addition, $645,000,000 has been spent for vocational training and rehabilitation of veterans and more than $56,000,000 has been disbursed to veterans or their dependents under the adjusted compensation act. The bureau is operating fifty hospitals with a total bed capacity of 22,112, and there were 8,413 beds reserved for veterans in other hospitals operated by other government agencies.

CONNECTICUT

Society News.—Dr. Lee S. Huizenga, from Yale University School of Hygiene and Public Health, addressed the New Haven County Public Health Association, New Haven, December 6, on "Leprosy from the Public Health Standpoint."—Seven cases of smallpox were discovered in Unionville and Farmington early in December.

Yale Opens New Laboratory Building.—Physicians of Connecticut were invited to attend the opening, January 3, of the new laboratory building for the joint use of the Yale University School of Medicine and the New Haven Hospital; on the following day the laboratories were opened to the public. The building is U shaped, enclosing an area equal to half a city block. Each wing is about 200 feet by 50 feet and is named in recognition of a major benefaction, the east wing being known as the Anthony N. Brady Memorial Laboratory; the south wing, as Lauder Hall, and the west wing as the Farnam Memorial Building. There are 225 rooms. New Haven Hospital will have eight new operating rooms, an accident ward and suites of examining rooms and facilities for the treatment of orthopedic patients. Yale University School of Medicine will have in this building quarters for research and the teaching of surgery, obstetrics, gynecology, pathology, bacteriology, nursing and public health. The building is connected directly with the existing wards of the New Haven Hospital. It represents another step in the making of a compact unit which will comprise the New Haven Hospital, the New Haven Dispensary, Yale University School of Medicine and the Yale School of Nursing. A unique feature is the provision of administrative offices for each full-time member of the staff of the hospital and of the medical school. There are twelve small laboratories, to each of which six students are assigned for the year; each student will have a key so he may use his room day or night. There are living quarters on the fourth floor of the Brady Memorial Laboratory and in the basement of the Farnam Memorial for interns. The entire



fourth floor of the Farnam Building is given over to operating rooms for the New Haven Hospital. In the orthopedic unit there are facilities for physical therapy, a small gymnasium and swimming pool, and a workshop for making braces and splints. The new building constitutes the fifth unit of the hospital and medical school group to be completed in the last ten years. It was made possible by a gift of $1,250,000 to the university from the General Education Board, New York (THE JOURNAL, Jan. 21, 1928, p. 211). In the near future it is planned to erect a 100 bed ward for medicine and obstetrics with the gift of $1,000,000 to Yale University made recently by Mr. A. E. Fitkin, New York.

ILLINOIS

Study of the Ketogenic Diet in Epilepsy.—The Chicago State Hospital is making a study of the merits of the ketogenic diet and acid-producing drugs in the treatment of epilepsy. Eighty patients are under treatment; a special dietitian has charge of the menus. The diet is such that the patients do not object to it. The nursing of these patients is supervised by nurses from the state school for psychiatric nursing, and laboratory work to determine the changes in metabolism is carried on. It will be several months before the study is completed.

Examination for Health Director of Cook County.—The Civil Service Commission of Cook County will hold an examination in room 512, County Building, Chicago, 1 p. m., January 29, for the selection of a public health director in the rural districts of the county. The examination will comprise a special subject which will count 5, an oral examination, 2, and experience, 3. The salary will be $416.66 a month and $75 a month for the operation and maintenance of a privately owned automobile. The duties of the public health director involve the supervision of quarantine of contagious diseases, the physical examination of school children in rural districts, and the general supervision of county health problems. Applications must be filed with the Cook County Civil Service Commission, of whom Mr. Erwin J. Hasten is secretary, before noon of the day preceding the examination.

Chicago

Personal.—Dr. Ernest E. Irons, dean of Rush Medical College, will be a visiting lecturer in January to the School of Tropical Medicine of the University of Porto Rico, San Juan, as will Prof. Edwin O. Jordan, Sc.D., University of Chicago, who will lecture on food poisoning, the epidemiology of paratyphoid infection and the epidemiology of influenza.——Joseph Purvis became superintendent of the Rogers Park Hospital, January 1.

Resolution Regarding Roentgenoscopy.—The Chicago Roentgen Society, November 8, adopted a resolution indicating that efforts were being made to induce technicians to make fluoroscopic or roentgenoscopic examinations of patients and protesting against such efforts. The society considers that these examinations should be made only by graduates in medicine and not by technicians unless they are also physicians. It was pointed out that this work requires a thorough knowledge of physiologic and pathologic conditions and a knowledge of general medicine.

Society News.—Dr. Russell A. Hibbs, New York, addressed the Chicago Medical Society, December 19, on "Relation of Developmental Abnormalities at the Lumbosacral Juncture to Low Back Pain and Disability"; Dr. Arnold H. Kegel, commissioner of health, on the present influenza epidemic, and Dr. Charles H. Miller on "Treatment of Influenza."——It was reported at the last meeting of the council of the Chicago Medical Society that the "Public Health Institute" has taken over the Illinois Social Hygiene League and is now running it as part of the institute.——Dr. Ralph H. Major, Kansas City, addressed the Chicago Medical Society, January 9, on "Cause and Treatment of Hypertension," and Dr. Leon Unger on advances in the study of bronchial asthma.——Dr. William F. Rienhoff, Jr., Baltimore, addressed the Chicago Surgical Society, January 4, on "Normal Structure of the Thyroid Gland and Changes in Structure Associated with Hyperthyroidism."——The Chicago Gynecological Society will be addressed, January 18, at 50 East Erie Street, by Drs. Henry Schmitz on "Prognostic Value of Histologic Malignant Index in Carcinoma of Cervix Uteri," and Charles E. Galloway on anemia in pregnancy.——Dr. Frank L. Rector has taken up his duties as full-time executive secretary of the Chicago Medical Society.——Dr. Bernard Portis will address the Chicago Pediatric Society, January 15, at the Medical and Dental Arts Club, 185 North Wabash Avenue, on "Clinical and Surgical Observation of Acute Appendicitis in Children," and Dr. Mynie G. Peterman, Milwaukee, on "Suprarenal Insufficiency in Children."

INDIANA

Indianapolis Honors Yellow Fever Volunteer.—The Indianapolis Medical Society will have as its guest of honor, January 19, Private John R. Kissinger of Huntington, Ind., who, following the Spanish-American War, volunteered to be bitten by infected mosquitoes during the epoch-making experiments conducted in Cuba by the U. S. Army Commission, of which the late Walter Reed was head. The principal speaker on this occasion will be Surg. Gen. Merritte W. Ireland, U. S. Army (THE JOURNAL, July 23, 1927, p. 302).

Ethylene Explosion Kills Anesthetist.—Dr. Dalton Wilson, anesthetist at the Walker Hospital, Evansville, and a member of the Associated Anesthetists of the United States and Canada, was instantly killed, January 3, when a drum of ethylene gas which he was trying to repair exploded in the laboratory. The explosion is said to have practically destroyed part of the building and to have injured Dr. Wilson's assistant also. It is believed to have been due to a spark caused by friction against the metal drum.

LOUISIANA

Society News.—The Shreveport Medical Society is broadcasting health talks over Station KWKH, Shreveport, at 10:15 p. m. The next talk will be given, January 18, on diseases of children by Dr. Michael S. Picard; February 15, Dr. Louis Abramson will speak on diseases of women, and March 15, Dr. William J. Sandidge on home hygiene.——Dr. Valentine H. Fuchs is president of the Kiwanis Club, New Orleans, for the ensuing year.——Judge W. W. Westerfield, New Orleans, will address the annual meeting of the Orleans Parish Medical Society at the Hutchinson Memorial Building, Canal and Villere streets, January 14. The public is invited.

Explanation of New Orleans' Death Rate.—The superintendent of public health of New Orleans, Dr. William H. Robin, writes that the item in THE JOURNAL, Dec. 15, 1928, page 1900, gives an erroneous impression of health conditions in New Orleans, in view of the fact that the negro population comprises about one third of the total population of the city. He states that the death rate among the negroes of New Orleans, for the week ending December 1, was 34.82. New Orleans also includes all deaths of nonresidents, both white and colored, who die in the city hospitals, which tends to increase the death rate. Dr. Robin says that the death rate in 1928 for the white population, both resident and nonresident, was about the same as in the previous year, 14.33.

MARYLAND

Personal.—Dr. David R. Newcomer, Sharpsburg, fell from the roof of his home while erecting a radio aerial, December 19, and fractured his skull.——Haywood M. Taylor, chemist for the Fisk Rubber Company, has accepted a position as head of the department of chemistry in the Wilmer Ophthalmological Institute of Johns Hopkins University School of Medicine, Baltimore.——Dr. John Frederick Hempel has been appointed director of the bureau of communicable diseases of the Baltimore City Health Department, succeeding Dr. Joseph P. Franklin, resigned. Dr. Hempel has been with the department for years as assistant commissioner of health and will continue to hold that position.——Dr. Esther L. Richards of the Henry Phipps Psychiatric Clinic, Baltimore, addressed the Women's Civic League, Baltimore, January 9, on "Facts and Fancies About Nerves."

Fund for Study of Cancer.—Mr. Francis P. Garvan, head of the Chemical Foundation, has given Johns Hopkins University, Baltimore, $60,000 to enlarge the laboratory of Dr. Joseph C. Bloodgood for cancer study and to support research. The gift provides $10,000 for additions to the laboratory and $10,000 a year for the next five years for research. Dr. Bloodgood, who is reported to have spent a good deal of his own money in supporting the laboratory, said that these funds will be devoted to the study of human cancer, particularly in reference to the use of dyes and stains in its early diagnosis and treatment. He desires to emphasize the fact that cancer, as a result of education of the people, is becoming a microscopic disease. The research work on differential staining of frozen sections of fresh tissue will at the same time, Dr. Bloodgood says, educate surgical pathologists, of whom there is an insufficient number today.

MASSACHUSETTS

Bills Introduced.—House bill 55 embodies recommendations of the commissioner of public health who asks for authority to require by regulation refrigeration of all dead rabbits brought into Massachusetts to prevent the spread of tularemia, which, it is said, is now found in all parts of the country except New England. House bill 56 would require all dealers handling 200 quarts of milk or more to have that milk pasteurized or certified. House bill 60 would authorize all police officers to arrest without warrant persons driving a motor vehicle while under the influence of liquor. House bill 66 would provide a penalty for whosoever shall operate a motor vehicle while under the influence of exhilarating or stupefying drugs. House bill 97 provides for compensation under the workmen's compensation law during the entire period of total incapacity, this compensation to equal two thirds of the average weekly wages but in no case to be more than $18 or less than $9 a week. House bill 35 provides for compensation to inmates of penal institutions permanently injured working therein. House bill 52 provides for annual publication of names and addresses of physicians. House bill 53 provides for traveling and other necessary expenses of the Board of Registration of Nurses. House bill 54 extends to optometrists the provisions of the Statute of Limitations for malpractice, now accorded physicians, surgeons and dentists. House bill 59 authorizes the department of public health to gather and disseminate public health information. House bill 137, introduced at the instance of the department of industrial accidents, provides that no agreement by any employee to waive his right to compensation shall be valid.

Society News.—The Essex North District Medical Society held its semiannual meeting at Haverhill, January 2; following a dinner Dr. James D. Barney, Boston, spoke on infections of the urinary tract, and Dr. Horace D. Arnold, Boston, on some aspects of the work of the board of registration in medicine; Dr. John W. Bartol, ex-president of the state medical society and president of the Boston Medical Library, spoke on the building and endowment fund which is being raised to enlarge the library and to provide a headquarters for the state medical association.——The committee appointed by Mayor Nichols of Boston to study conditions in the health department and the handicaps under which it works reports that the department should be housed in a separate building distinct from other municipal agencies, and proposes a site in the Fenway, bounded by Forsyth Road, Huntington Avenue and Hemenway Street. Architectural studies have been made as to the utilization of this site, and the committee recommends that the mayor take steps with the legislature and city council to consummate this plan.——Prof. Heinrich Poll, Hamburg, Germany, lectured at Harvard University Medical School, Boston, January 8, on "Epinephrine, Insulin and Sex Hormones from the Viewpoint of the Interrelationship." Professor Poll is in this country as the first Abraham Flexner lecturer at Vanderbilt University, Nashville, Tenn.——Harvard University is giving again a series of free public medical lectures on Sunday afternoons at 4 p. m.; no tickets are required. The speaker, January 13, will be C. E. Turner on "The School Health Program"; January 20, Dr. James P. O'Hare, "Chronic Bright's Disease and High Blood Pressure"; January 27, Dr. W. B. Cannon, "Natural Defenses of the Body." The series will continue until April 14. ——The Massachusetts Society for Mental Hygiene is broadcasting programs on alternate Mondays over Station WEEI at 2:30 p. m. The February 11 talk will be on "Psychiatry and the Law" by Dr. Winfred Overholser, Boston, of the state department of mental diseases.

MICHIGAN

Society News.—The secretaries of the county medical societies of Michigan will make their headquarters at the Palmer House in Chicago while attending their annual conference which, this year, will be held at the headquarters of the American Medical Association, January 16-17.——Dr. Byron W. Malfroid, Flint, addressed the Gratiot-Isabella-Clare Counties Medical Society, December 13, on "The Toxemia of Pregnancy."——Dr. Frank M. MacKenzie, Detroit, addressed the St. Clair County Medical Society, Port Huron, December 13, on use of radium in medicine, and Dr. Harry M. Kirschbaum, Detroit, on surgical repair of lacerations after labor.

What Twenty Patients Paid Quacks.—In an address before the Wayne County Medical Society, W. T. Crotzer, who made an investigation of quackery in Detroit, revealed "an almost incredible condition." Quackery, he said, was affecting thousands of people, and quacks were distributing an average of more than 1,000,000 booklets, cards and circulars on the streets each month. Today none are being distributed and some of the prominent quack offices have been closed. In the investigation, before the aid of the police was requested, some patients who went to quacks were taken to reputable physicians and examined. Patient 1, for example, paid the quacks $1,175 in two weeks, although no disease existed. Patient 2 is said to have paid the quacks $1,470 in five weeks; this patient had no disease. Twenty patients selected at random from the books of a quack paid $20,166, not including a weekly charge of $3 which each paid for medicine. In five years in that office about 5,000 victims paid in fees alone more than $1,000,000. The backbone of quack offices, he said, is the "case taker," who is paid a handsome salary, chiefly to frighten victims into believing that they are suffering from some terrible disease. One office lists the salary of the "regular doctor" at $400 a month and of the "case taker" at $1,000. The majority of "regular doctors" who are hired to give these places a semblance of legitimacy, Crotzer says, are disreputable drunks and drug addicts.

MINNESOTA

Society News.—The Minnesota Academy of Medicine was addressed, January 9, at St. Paul, by Dr. Winford P. Larson on "The Problem of Anaphylaxis," and by Dr. Elexious T. Bell on "Lipoid Nephrosis."——Drs. Charles H. and William J. Mayo, Rochester, were awarded the honorary degree of doctor of medicine by the University of Havana, during their attendance at the recent Pan-American Medical Association meeting in that city.——The building fund of the Hennepin County Medical Society, Minneapolis, amounted to more than $2,500 at the close of 1928.

Errington Fined Under Basic Science Law.—Robert G. Errington, an unlicensed naturopath, was fined $500 and costs in the district court of Lac Qui Parle County, Dec. 11, 1928, for violating the Minnesota basic science law on a charge of attempting to treat a case of infantile paralysis for which he was paid $500. Because Errington claimed that he was no longer a resident of Minnesota and because he is under a suspended sentence for five months imposed in June for violating the medical practice act, at which time he served thirty days in jail at Olivia, the court was inclined to suspend the sentence. However, Errington paid the costs.

NEW YORK

Bill Introduced.—Senate bill 4 would amend the workmen's compensation law by adding to the list of compensable occupational diseases, all disabling diseases and disabling illnesses.

Society News.—The Erie County Medical Society is broadcasting weekly health talks over WGR. Physicians having a worth while health message are urged to submit their names to the radio committee, of which Dr. Julius Richter, Buffalo, is chairman. A copy of the talk must be sent at least a week before the broadcast; the committee reserves the privilege of censoring all articles. The talks on January 18 and January 25 will be by Dr. William F. Jacobs, Buffalo, on "Bacteria, Good and Bad" and "Fighting the Invisible Enemy."——Dr. Edward S. Godfrey, Jr., director, division of communicable diseases, state department of health, has been appointed clinical professor of epidemiology at the College of Physicians and Surgeons, Columbia University, New York.——The Rockefeller Foundation has given to Albany Medical College $100,000 which, together with $200,000 from Edward S. Harkness, will be used for graduate work in behalf of rural physicians.

Demonstration of Gastric Camera.—About 100 physicians were present at Sing Sing Prison, Dec. 22, 1928, at a demonstration on a prisoner of a new so-called gastric camera, with which photographs of the interior of the stomach are said to have been made. The prisoner was used for the demonstration because he had recently undergone an operation for gastric ulcer. The apparatus consists, it is reported, of a long rubber tube, about 2 inches from the end of which is a cylindric camera, 2 inches by one-half inch, equipped with a lens and films. The rubber tube is perforated above the camera and the perforation is enclosed by quartz glass. A fine wire inside the tube lights up when the camera is in operation like the filament in an electric lamp. Just above this perforation in the tube is another similar camera. The eight films in each camera combined are very small, but they can be enlarged many times when prepared for inspection. The demonstration was in charge of Dr. Samuel Weiss, New York, who was assisted by Dr. Lawrence D. Cremin of Ossining. Dr. Weiss also demonstrated the gastric camera, December 18, before the American-Hungarian Medical Association at the New York Academy of Medicine.

New York City

Society News.—Sir Winfred T. Grenfell will address the Kings County Medical Society, Brooklyn, January 15, on "The Challenge of Labrador"; Dr. Grenfell for many years has been engaged in medical work among the fishermen of Labrador. ——Dr. Louis H. Levy addressed the New York Electrotherapeutic Society, January 2, on "Colitis."——Dr. Gregory Schwartzman lectured at the Mount Sinai Hospital, January 10, on "A New Immunologic Phenomenon."——Tuberculosis clinics have been opened by the city health department at 505 Pearl Street and 325 East Thirty-Eighth Street for diagnostic purposes in cooperation with practicing physicians.——Vilhjalmar Stefansson began a course of twelve lectures, January 2, on northern exploration under the auspices of the New School for Social Research at Rumford Hall, 50 East Forty-First Street.

Social Worker Succeeds Physician as Director of Health Demonstration. — Health Commissioner Wynne announces the appointment of Edward T. Devine, Ph.D., as director of the Bellevue-Yorkville Health Demonstration to succeed Dr. Leverett D. Bristol, resigned. His duties will be to assist the sixty-seven agencies comprising the community health council in coordinating their health work. Dr. Devine was general secretary of the New York Charity Organization Society for more than twenty-one years, was director of the New York School for Social Work for ten years, and professor of social economy at Columbia for fourteen years. He was president of the National Conference of Charities and Correction in 1906; chief of the bureau of refugees and relief under the American Red Cross Commission in 1922, and dean of the graduate school of the American University, Washington, D. C., from which he resigned to come to the health demonstration in New York.

Rockefellers Consolidate Foundations.—The Rockefeller Foundation and the Laura Spelman Rockefeller Memorial were consolidated, January 3, into a new corporation to be known simply as the Rockefeller Foundation. The aim of the new philanthropic corporation will be the advancement of knowledge, including activities in public health and medical education and research, as was carried on formerly by the Rockefeller Foundation, and the continuation of the social science work of the former Laura Spelman Rockefeller Memorial and part of the program of the International Education Board. The General Education Board, another Rockefeller benefaction, is not affected by the consolidation. The reason for uniting the foundations, whose total net assets exceed $264,000,000, was the desire to avoid overlapping in work done, and to insure greater unity and cooperation in the programs which heretofore were administered under the two boards independently. George E. Vincent, Ph.D., president of the original Rockefeller Foundation, retains that office in the consolidated organization. A new corporation, the Spelman Fund of New York, was created to continue the work carried on by the Laura Spelman Rockefeller Memorial in the advancement of knowledge concerning child life, the improvement of interracial relations and cooperation with public agencies. The amount of its capital fund was not announced. Mr. Rockefeller established the Laura Spelman Rockefeller Memorial in 1918 as a memorial to his dead wife. The Rockefeller Foundation was established in 1913 with an initial gift of $100,000,000, to which in 1917 Mr. Rockefeller added $25,000,000. Its purpose, as set forth in the articles of corporation, was "to promote the well being of mankind throughout the world." Its chief work has been in medical education and research, public health and the biologic sciences. The four Rockefeller boards, namely, the Rockefeller Foundation, the General Education Board, the International Education Board and the Laura Spelman Rockefeller Memorial have distributed since their establishment from capital funds a total of $225,000,000, exclusive of appropriations from income.

OREGON

Director of Demonstration Appointed.—Dr. Estella Ford Warner has been appointed director of the Marion County child health demonstration at Salem to succeed Dr. William DeKleine, who resigned to become associated with the American Red Cross in Washington, D. C.

Society News.—Officers of the Portland City and County Medical Society and of the state medical association recently gave a dinner at the University Club, Portland, to representatives of the American Medical Association, who conferred with them concerning arrangements for the annual meeting in Portland, July 8-13. The Portland City and County Medical Society was addressed, December 7, by Dr. Albert Brachet of the University of Brussels on "Heredity as an Embryologic Process."

PENNSYLVANIA

Health at Pittsburgh.—Telegraphic reports to the U. S. Department of Commerce from sixty-three cities with a total population of about 29 million, for the week ending Dec. 29, 1928, indicate that the highest mortality rate (42.8) was for Pittsburgh, and that the mortality rate for the group of cities as a whole was 18. The mortality rate for Pittsburgh for the corresponding week last year was 16.9 and for the group of cities, 13.8. The lowest rate (7.2) was for Duluth, Minn. The highest infant mortality rate (171) for the week was for Pittsburgh also and the lowest for Des Moines, Schenectady and Spokane. For the fifty-two weeks of 1928, the annual rate for sixty-two cities in this list was 13, as against 12.3 for the corresponding weeks of 1927. Caution should be used in the interpretation of weekly figures; they fluctuate widely. The facts that some cities are hospital centers for large areas outside the city limits and that they have a large negro population may tend to increase the death rate (note item under Louisiana in this issue).

Society News.—At the annual meeting of the Pennsylvania Tuberculosis Society, Pottsville, January 15-16, there will be a symposium on the activities of the local tuberculosis agencies, and a medical session which will be addressed by Drs. Henry R. M. Landis, Philadelphia, on the relation between tuberculosis and pregnancy and Elmer H. Funk, Philadelphia, on the recognition of tuberculosis in childhood; speakers at other sessions will include Drs. Kendall Emerson of the National Tuberculosis Association; Thomas G. Simonton, president of the state medical society; Orlando H. Petty; Edward N. Packard, Saranac Lake, N. Y.; Mary Riggs Noble; David R. Lyman, Wallingford, Conn., and Theodore Appel, state health officer; there will be a program of entertainment also. ——Health will be the keynote of the program at the twenty-first annual session of the Pennsylvania Conference on Social Welfare at Harrisburg, February 13-16. Among others, Dr. Joseph C. Doane, Philadelphia, Dr. Frankwood E. Williams, New York, and Michael M. Davis, Ph.D., will speak. ——The Welfare Fund of Pittsburgh closed its first annual campaign, Dec. 3, 1928, with a total subscription of more than $970,000, which was in excess of the goal; more than 47,000 persons subscribed to the fund.——Dr. William Wayne Babcock, Philadelphia, addressed the Lycoming County Medical Society at its eightieth annual meeting, Williamsport, January 11, on "Management of Peripheral Nerve Lesions." Other speakers included Dr. William T. Sharpless, West Chester, president-elect of the state medical society, and Emerson Collins, member of the state public service commission, who gave the address at the unveiling of a memorial tablet. Dr. Morris Fishbein, editor of THE JOURNAL, addressed a public health meeting in Williamsport, Dec. 28, 1928, under the auspices of the Lycoming County Medical Society and the women's auxiliary on "Fads and Quackery in Medicine."

Philadelphia

Personal.—The gold medal of the Pennsylvania Society of New York was presented to Dr. William W. Keen, professor of surgery emeritus, Jefferson Medical College, at the thirtieth annual meeting of the society in New York, December 15.—— A testimonial dinner was given, December 17, in honor of Dr. Pascal F. Lucchesi, who was recently appointed resident physician at the municipal hospital.——Dr. Walter R. Livingston has been appointed surgeon for the police department of Lansdowne. —— The Phi Lambda Kappa Medical Fraternity presented a gold medal to Dr. Solomon Solis Cohen at a dinner, Dec. 30, 1928. —— Dr. Arthur C. Morgan has been appointed chairman of the disabled soldiers and medical aid committee of the Philadelphia County Council of the American Legion.

Hospital News.—The new 738 bed Hahnemann Hospital, Broad Street above Race, was opened the first of the year, and the old Hahnemann Hospital at Fifteenth Street above Race, after more than forty-four years of use, has closed its doors. The new hospital is modified American gothic; there are 185 private hotel-type bedrooms which can be used in suites, and 333 public beds; the fourth and tenth floors have accommodations for ninety-two new-born babies. There are 126 semiprivate beds on the eighth, ninth and tenth floors. All bedrooms from the tenth to the seventeenth floors have rubber floors. The formal opening of the hospital was the occasion for an elaborate "housewarming."——The Philadelphia Home

for Infants, 4618 Westminster Avenue, was discontinued about January 1 in favor of the modern method of finding foster families for children, and offices have been opened in the Social Service Building.

Society News.—Dr. William Darrach, New York, addressed the medical history section of the College of Physicians, December 18, on "Skyscrapers in Medicine."——Some bureaus of the department of health are reported to have been packed up and ready since July to move into new quarters in the city hall annex.——The presidential address of Dr. Pascal Brooke Bland before the Philadelphia Obstetrical Society, January 3, was on "Obstetric Mortality and Obstetric Pedagogy"; papers were presented by Dr. Walter F. Harriman on "Treatment of Endocervicitis with Actual Cautery and Electrocoagulation," and by Drs. Lewis C. Scheffey and William H. Schmidt on "Diathermy in Treatment of Pelvic Inflammatory Disease."——Dr. William G. MacCallum, professor of pathology, Johns Hopkins University School of Medicine, Baltimore, addressed the College of Physicians of Philadelphia, January 2, on "Mycotic Aneurysms."——The Philadelphia Heart Association was addressed, January 9, at the College of Physicians by Dr. Jacob M. Cahan on "Incidence of Heart Disease in School Children."——Influenza and pneumonia will be the subject considered by the section on public health and industrial medicine of the College of Physicians of Philadelphia, January 18, and among the speakers will be Surg. Gen. Hugh S. Cumming, U. S. Public Health Service, and Dr. Peter K. Olitsky of the Rockefeller Institute, New York.

SOUTH CAROLINA

Society News.—At the annual meeting of the Marlboro County Medical Society, Bennettsville, January 10, Drs. Walter R. Mead, Florence, spoke on "Achlorhydria"; James Wilkinson Jervey, Greenville, "Arsenicals and the Optic Nerve," and William T. Graham, Richmond, Va., "Restoration of Function by Silk Inserts in Injured or Destroyed Tendons." After the banquet, Drs. Oren Moore, Charlotte, N. C., spoke on "Observations on the Treatment of Puerperal Sepsis"; Kenneth M. Lynch, Charleston, "Carcinoma of the Cervix Uteri," and Hubert A. Royster, Raleigh, N. C., "A Large Gluteal Aneurysm Simulating a Sarcoma of the Buttock."

WEST VIRGINIA

Building Fund Created.—The McDowell County Medical Society has established a building fund to be presented to the state medical society when it is ready to erect a permanent home in Charleston. The society has deposited $50 in a savings account for this purpose and at the end of each calendar year will deposit 10 per cent of its net surplus in this account. The McDowell County Medical Society's action was voluntary and was the first of the kind in the state.

Society News.—Dr. William S. Middleton, Madison, Wis., addressed the Ohio County Medical Society, Wheeling, December 21, on "Treatment of Lobar Pneumonia"; Dr. John M. T. Finney, Baltimore, addressed the society, December 7, on "The Human Side of Surgical Practice."——Lewis County Medical Society, December 11, voted down a proposal to merge with the Central West Virginia Medical Society.——The Academy of Medicine of Parkersburg was addressed, December 8, by Dr. Arthur S. Jones, Huntington, on "Tuberculosis in Bone."——The McDowell County Medical Society voted, December 12, to present $50 to the Salvation Army; this meeting was addressed by Dr. John C. Robertson, Salem, Va., on "Treatment of Certain Forms of Tuberculosis." The society also voted to oppose the proposed legislation which would change the present state policy of handling the state hospitals, either abolishing them or changing the work entirely, and appointed a committee of three to look after the interest of the society in this respect.——Dr. Carl C. Romine, Morgantown, addressed the Harrison County Medical Society, December 6, on gallbladder disease.——Dr. Carl A. Hamann, Cleveland, addressed the Ohio County Medical Society, Wheeling, January 4, on "Pathologic Conditions in the Upper Abdomen."

GENERAL

Influenza Outbreak Declines.—New cases of influenza reported in thirty-two states, for the week ending Dec. 29, 1928, totaled 132,682, indicating, officials of the U. S. Public Health Service said, in view of the opinion that only about one in five cases has been reported, that at least 663,000 cases actually existed in these states. The outbreak apparently declined during the holidays. Surgeon General Cumming, however, called a conference of health officers and scientists from all parts of the country, January 10, to emphasize the necessity for additional research on influenza and to assist in completing plans for an extensive field study of the present outbreak.

Another Reminder.—Four weeks ago a colored slip "Yearly Subscription Statement" was placed in each copy of THE JOURNAL. These slips, accompanied by remittances for the 1929 dues, were returned by large numbers of Fellows and subscribers with a very satisfying degree of promptitude. Obviously some have laid the slip aside. Since dues for the current year are payable in advance, another slip is placed in each copy of THE JOURNAL this week so that all payments may be now taken care of and the necessity of sending personal bills obviated. As in the previous colored slip, you will find listed all of the special journals published by the Association and *Hygeia* with their respective subscription prices, making it a convenient form for paying all subscriptions with one remittance. If you have not already paid the 1929 dues, please consider the colored slip as a personal reminder, and cooperate by remitting at your early convenience. Those who have paid will naturally disregard the slip, but to them it will be a reminder of a duty well done.

Medical History of World War Completed.—The history of the army medical department in the World War, compiled under the direction of Surg. Gen. Merritte W. Ireland and the chief editorship of Col. Frank W. Weed, has been completed. Many physicians in civil practice throughout the country who participated in the World War assisted the medical department at their own time and expense in preparing many of the chapters of this history. The fifteen royal octavo volumes were not published in sequence but as they were made ready. The first part of volume 15, for example, appeared in 1921. Volume 9 is the smallest, with 600 pages and part 2 of volume 15 is the largest, with 1,400 pages. Most of these volumes have been reviewed in THE JOURNAL and at least one has been the subject of an editorial. The history is a record of the problems and accomplishments of the medical department and of the contributions to medical science that grew out of the war. Copies have been distributed to medical libraries, hospitals and some public institutions, but no provision has been made for distribution to individuals. Extra copies may be purchased from the superintendent of documents, government printing office, Washington, D. C., at from $2 to $4 a volume. Great Britain and Germany have already published their medical histories of the war; France and some other countries are engaged in publishing theirs.

Medical Bills in Congress.—S. 3127, amending existing law relative to the mailability of poisons and pathogenic microorganisms, has passed the Senate. A bill identical in its terms, H. R. 10441, has been passed by the House. S. 5034, introduced by Senator King, Utah, authorizes the erection of a veterans' bureau hospital in the state of Utah. S. 5071, introduced by Senator McMasters, South Dakota, provides for the erection of a sanatorium in South Dakota for tuberculous Indian children. H. R. 15625, introduced by Representative Crail, California, amends the Emergency Officers' Retirement Act so as to provide that any person who at the time of the passage of the act was carried on the books of the veterans' bureau as being 30 per cent or more permanently disabled shall be entitled automatically as of the date of the passage of the act to the benefits accruing under such act to persons having not less than 30 per cent permanent disability incurred in line of duty. The bill further provides that such benefits are to accrue without the necessity of making application therefor. H. R. 15626, introduced by Representative Roy G. Fitzgerald, Ohio, provides compensation for members of the civilian military training camps who are injured in line of duty. H. R. 15729, introduced by Representative Swank, Oklahoma, amends the National Prohibition Act by increasing the penalty for violations.

Two Billion to Charity—Estimate for 1928.—The amount of philanthropic gifts made during 1928 is estimated by the John Price Jones Corporation, New York, as $2,330,600,000, a considerable increase over the previous year. Most of the gifts were to religious denominations, but many were made for the advancement of health. Heading the list of contributors was the late Payne Whitney of New York, who gave more than $45,000,000 to hospitals, libraries and universities; more than $18,000,000 of this went to New York Hospital which, in conjunction with Cornell University Medical School, is about to construct a great medical center. The Rockefeller Foundation gave $12,000,000 to the China Medical Board from which Peking Union Medical College and other work is financed. Mr. Rockefeller as an individual is said to have given $2,000,000 during 1928 to the Cité Universitaire in Paris; $1,000,000 to the University of Chicago, and $500,000 to a fund being raised

for the development of Jewish farm settlements in Russia. Edward S. Harkness, New York, gave $3,000,000 to Harvard University for an experiment in reorganization. The $10,000,000 residuum of the estate of Charles M. Hall, "father of aluminum," was to be distributed to higher educational institutions of the Near East and the Orient. A. E. Fitkin, New York, gave $1,000,000 to Yale for the study of chilldren's diseases, and the late Chauncey Depew a like amount to Yale. Another notable gift during 1928 was that of Myron Taylor of $1,500,000 to the Yale University law school.

Automobiles Improve but the Drivers Do Not.—Writing on the human element in automobile accidents, J. S. Baker, an engineer for the National Safety Council, remarks that automobile accidents twenty-five years ago were frequently due to mechanical faults in the machine and they were seldom serious because the machines and the rough roads shook caution into the driver. Today the cars almost never cause accidents by breaking down, as every part of them has been subjected to exacting tests before leaving the factory. This, together with improved roads, allows the driver to go about as fast as he desires. The driver himself, however, has not improved; indeed his responsibilities have increased with more powerful machines, good roads and congested traffic. Mr. Baker says that an examination of reports of automobile accidents shows that mechanical and physical causes count for not more than from 10 to 15 per cent, while the rest must be attributed to the drivers. The personal causes of accidents are grouped under (1) natural handicaps, such as poor eyesight, clumsiness and paralysis, the remedy for which is to limit permission to use the highways unless these personal defects are corrected; (2) ignorance, such as a lack of knowledge or skill in traffic, which may be prevented by education, and (3) inadvertency or a lack of will to prevent accidents. Under this class he places such distractions as hurry, unfortunate mental attitudes, worry and other conditions, partly mental and partly physical, which keep the driver's mind from the business of safe driving. The remedy for these causes also is education. The National Safety Council, through its committee on personality and public accidents, has under way investigations which will yield more accurate information on the personal causes of motor accidents.

Grants for Research on Effects of Radiations.—The general committee on radiation of the National Research Council announces that a generous response has met its request for funds to support research on the effects of radiation on organisms. The Commonwealth Fund and the General Education Board each have contributed $12,500 for this purpose, and these contributions will be repeated annually for a period of five years, if satisfactory progress can be made in the support of these investigations. Contributions or other funds have been received from manufacturers, together with donations of apparatus, such as roentgen-ray and ultraviolet equipment, and a loan of radium, totaling in value about $40,000. These funds are now available and investigators who have experience or peculiar qualifications for such work are invited to present requests for support not later than March 1, 1929, for the period ending May 1, 1930. Application blanks may be obtained about February 1 from the division of biology and agriculture, National Research Council, B and Twenty-First streets, Washington, D. C. To be eligible for consideration, an investigator must present evidence that he has a problem well in hand or he must have obvious qualifications, and must satisfy the committee that his institution is furnishing reasonable support and equipment. The time available for research will be a consideration. Items for which grants may be expended include (*a*) salaries of assistants and others employed to carry on the investigation; (*b*) purchase of materials, instruments and equipment such as might not be expected in a laboratory with good general equipment; (*c*) any other assistance which the project legitimately requires, and this may include a limited amount for traveling expenses by the investigator. The investigator's salary will be paid in full by his institution, which will thus contribute by the time he is allowed for research as well as by the general facilities of a well equipped laboratory. It may be possible in some instances, the announcement states, to allow men on sabbatical half-pay a balance on salary account not to exceed $2,500 a year. The solicitation of funds for this work was taken up by the division of biology and agriculture of the council at the request of a group of investigators. The general committee appointed comprises W. C. Curtis, chairman, L. L. Woodruff and D. H. Tennent; the subcommittee on solicitation of funds comprises W. C. Curtis, C. C. Little, Herman Schneider, William Crocker and L. L. Woodruff; the subcommittee on allotment of grants comprises D. H. Tennent, G. H. Parker, H. S. Jennings, C. E. Allen and W. C. Curtis.

Government Services

The Army Needs Medical Officers

Further review of the annual report of the surgeon general shows that the mean annual strength of the army for the calendar year 1927, as computed from sick and wounded reports, was 132,901 officers and enlisted men. There were 67,885 enlistments, of which about 64 per cent were first enlistments. This fact has a bearing on the health of the army, as recruits bring with them contagious diseases. There were twelve admissions among the military personnel during the year from typhoid. Of the twelve cases seven were contracted prior to enlistment; in five either typhoid prophylactic treatment had not been administered or the number of doses administered was less than three prior to admission to the hospital. In the other two cases the treatment was completed about the time of the onset of the disease. In four of the seven cases, the diagnosis was confirmed by laboratory analysis, and in three it was not. In all of the seven patients, except one, the disease was mild. There was one death. In four of the remaining five cases, the records indicate that prophylactic vaccination had been completed, and in one it had not. Three of these five patients were recruits who had only a few months' service when they were admitted to sick report. In all five the disease was mild, two being sick only five weeks each; in both of these the diagnosis was questionable, as it was not confirmed by laboratory analysis. There were 1,147 admissions to the hospital on account of alcoholism, giving a rate of 8.63 as compared with 8.01 in 1926; the highest rate was for white soldiers serving in China. Alcoholism caused seven deaths, exclusive of those from poisoning by wood or denatured alcohol and those caused from the late and remote effects of alcohol. The average number of patients in army hospitals each day for all causes was 6,201. The cost of operating the general hospitals, including the station hospital at Fort Sam Houston, was $5.325 per patient day; that figure includes the construction and repair of buildings and the maintenance of roads. Officers in the medical department, on June 30, 1927, numbered 932 in the medical corps; 158 in the dental corps; 126 in the veterinary corps, and sixty-nine in the medical administrative corps. No progress was made in filling the vacancies in the medical corps, which on that date amounted to fifty-two, as against fifty-one a year later. The surgeon general emphasizes the need for more medical officers. All general hospitals, corps areas and nearly all large stations and flying fields are undermanned; only by extraordinary efforts and sacrifices of leave of absence, he says, is it possible to care for the sick properly. General Ireland, for five years, has been regularly pointing out the distressing shortage of medical department personnel. An increase is essential to efficiency, and is required for the good of the entire army. He urgently recommends that the unsatisfactory personnel status of the regular army be communicated to Congress. The last session of Congress imposed further burdens on the medical department by authorizing medical attendance and hospitalization for trainees of the civil components of the army. Modern medicine, General Ireland says, is becoming more exacting and time consuming, while the increasing importance and multiplicity of physical examinations, surveys and other conservation measures entitle them to be considered on a basis with hospitalization. The growth of this kind of medical work since the World War has brought widespread demands for additional personnel which cannot be met under the current allowances. General Ireland believes, in view of the weighty obligations and mobilization requirements of the medical department, that the allowance of personnel now authorized in peace time is not justly proportioned and the only practical solution of the present problem is a speedy increase in the strength of the medical department personnel.

Examination for Entrance to Public Health Service

Examinations will be held in Washington, D. C., Chicago, New Orleans and San Francisco, February 4, of candidates for commission as assistant surgeon in the regular corps of the U. S. Public Health Service. Applicants must be between 23 and 32 years of age and must have graduated from a reputable medical college and have had one year's hospital or two years' professional experience. Requests for permission to take the examination should be addressed to the surgeon general, U. S. Public Health Service, Washington, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 6, 1928.

The Breeding of Beneficial Parasites

A laboratory for breeding beneficial parasites, established by the empire marketing board and under the control of the imperial bureau of entomology, has now been at work for rather more than a year. Consignments of insects have been sent out in response to requests from Canada, New Zealand, Australia, South Africa, Kenya, the Falkland Islands and different parts of England. Between 20,000 and 30,000 larvae of the pine tortrix, 90 per cent infected with a parasite that attacks it in its larval stage, were recently collected (largely from Brandon, in Suffolk) for Ontario. Ontario also received 20,000 parasites of the greenhouse white fly, which was exported on whole tomato sprigs and sent over in cold storage. Adult parasites of a scale insect that attacks fruit were sent over in small sealed test tubes to Vancouver and provided with raisins for nourishment in transit. The wood wasp *Sirex* infests most timber-growing countries. Its larvae bore their way into tree trunks, leaving behind them neat circular tunnels in the wood. The *Sirex* parasite is another fly, *Rhyssa*, with a long ovipositor which it thrusts right through the grain of the wood until it penetrates the body of the wood wasp larva, on which it lays its egg. Three hundred and fifty of these *Rhyssa* larvae have been collected in Devon and shipped to the Cawthron Institute in New Zealand. Australia and New Zealand have also received 30,000 larvae of the pear-slug infected with three species of parasites, collected mainly from northern France. The sheep blow-fly, a big greenbottle, lays its eggs in dirty and matted wool on living sheep, and the maggots that hatch out eat their way into the animal's body. There is, however, a parasite which in turn lays its eggs in the blow-fly maggot and eventually kills it. Hundreds of thousands of these maggots, with their appropriate parasites, are being bred at the laboratories, and some have already been exported in the chrysalis stage to Australia, South Africa and the Falkland Islands, where the blow-fly causes enormous loss of sheep life. Other recent exports include parasites of the wooly aphis of the apple, sent to India and Kenya Colony, and of the earwig, sent to New Zealand and Canada. Three Australian scientists from the commonwealth department of entomology are carrying out research at the laboratories under the superintendent, Dr. Thompson, who is himself a Canadian. One is working on the sheep maggot, or blow-fly, already mentioned; one on a parasite of the apple-ravaging codling-moth, and one on an insect that attacks a troublesome weed, Saint-John's-wort. Dr. Myers of the Farnham Royal staff has gone to the West Indies to deal with tropical parasites, and he will organize shipments of beneficial insects between the various islands and British Guiana.

The Effect of High Temperatures on the Miner

At the Institution of Mining Engineers, Mr. David Penman, principal of the School of Mines at Dhanbad, India, read an important paper on the effect of high temperatures on the miner. He stated that the Indian collier frequently worked in a mine with a wet-bulb temperature of 85 F., or even higher. Moreover, the air in most of the working places in Indian mines was practically still, or at best very sluggish; yet the miners worked apparently without any ill effects. As persons accustomed to hot damp air can work with comfort under hygrometric conditions very trying to men not acclimatized, Mr. Penman thinks it may be that the acclimatization of the Indian enables him to withstand heat in coal mines better than the average white man. The Indian miner, indeed, prefers to work in a warm place. He likes a gallery in which the temperature is, say 75 F., better than one in which it is 50. Nor does he like to work in a strong breeze. He wears practically no clothing, whether the mine atmosphere is warm or cool; thus his whole body is exposed to the drying and cooling action of the air. He also works irregularly, remaining at work for about an hour, and then resting in a cooler place for fifteen minutes or more. While actually at work he works hard, though probably not at the rate of the British collier. He is, as a rule, shorter in stature and of much lighter build, and consequently expends less energy in physical exertion. But he dislikes any change in the temperature conditions to which he is accustomed, and would resent transfer from a place where the temperature is, say, 88 F. and the humidity 98 per cent, to a place where the temperature is twenty degrees lower.

In the discussion which followed, Dr. J. S. Haldane said that his experience with deep submarine workings off Cornwall, where very high temperatures were registered, was very like that of Mr. Penman's; the men remained there for a short time, and then came out and cooled down, usually under a jet of compressed air. They were exceptionally healthy in spite of the conditions. He himself had found it very difficult to remain when the wet-bulb temperature was more than 80. In England he had come across only one case of heartstroke—in a man who was assisting in rescue operations after a disaster. The wet-bulb temperature there was about 85 F., and he was wearing a flannel shirt. Evidently under the pressure of rescue operations he failed to adjust himself to the temperature conditions, as the white man at least could generally be trusted to do, and died of apoplexy. Mr. James Whitehouse, a mining engineer from the Rand, mentioned that in some of the gold mines men worked at a very high temperature, although the ventilation was extremely good. But the Africans appeared to be less happy in the mine than the Indians, perhaps because, though equally inured to hot conditions, they were less accustomed to humidity. A number of those not acclimatized succumbed to heat apoplexy. It was now a rule that the miners should stay for a month in the upper workings, where conditions were less strenuous. Most of the cases of heat apoplexy had proved fatal.

Immunization of Dogs Against Distemper

A progress report making an important advance has been submitted by the Distemper Research Committee to the *Field* Distemper Council and the Medical Research Council on the investigations into the cause and prevention of dog distemper by Dr. P. P. Laidlaw and Mr. G. W. Dunkin. Their work has added to the knowledge of the causation of the disease, and it has already also brought practical success in the prevention of distemper in ferrets and in dogs. The knowledge and experience gained must have a wider value, as indeed events have already proved, for the study and control of virus diseases in general among men and in other animals. The method consists of a double inoculation. The first inoculation is made with the inactivated virus of distemper. The second is made, after an interval of about ten days, with an attenuated strain of living virus. The dose of living virus is a hundredfold that which would infect a dog not previously treated with the vaccine, but as a rule it is not followed by anything more than a trivial and transient disturbance of health; often no departure from the normal can be detected. Dogs that have undergone this double inoculation have proved completely resistant to the disease thereafter, whether exposed to infection by being placed in close contact with animals suffering from the disease or by the administration of infective material. The method of preparing the vaccine is not yet ideal, and its dosage and that of the living virus given subsequently can be undertaken only by skilled hands. But until artificial cultivation of the virus, out-

side the animal body, has been achieved, these difficulties are not likely to be completely removed. Arrangements are being made with a well equipped commercial laboratory to undertake the production of the vaccine on a large scale.

There is little doubt that the complete solution of the problem of preventing distemper demands the cultivation of the virus apart from the living animal. This has so far baffled the ingenuity of the investigators. Nor in general have those working at other virus diseases, here or in other countries, been more successful as yet; but the solution of the problem in any one case is not unlikely to point the way to its solution in others. The investigators are therefore continuing their efforts to grow the virus of distemper in artificial mediums. Another line of research being pursued has as its goal the production of a potent antiserum. Efforts to do this at an earlier stage in the work were unsuccessful, but lately, owing to the greater knowledge of immunity against the disease, which has been obtained, a renewal of these attempts has led to more promising results. If a powerful antiserum could be made, it would offer an alternative method of immunizing dogs; namely, the simultaneous injection of antiserum and living virus. The former would prevent the animal from having more than a mild and brief attack of fever, while the latter would confer a lasting resistance. The possible advantage of this method is that it would involve only one injection and might thus prove more manageable in practice than the method of vaccination described in detail in the report. Further, a really powerful antiserum might provide a useful curative treatment for dogs already suffering from distemper, if administered in the early days of the disease.

International Cancer Statistics

This year the director of the imperial cancer research fund has departed from the usual custom of confining his report to the papers published from the laboratory during the past year and has discussed on more general lines certain aspects of international cancer statistics. One of the most interesting features of recent statistics has been the gradual approximation of male and female mortality from the disease. Until twenty years ago the female mortality was greatly in excess of the male, the excess being due to the frequency of cancer peculiar to the female organs. This difference has gradually been diminishing till now the cancer mortality is practically the same in the two sexes in England, Wales, Holland, Switzerland and Japan. Even more remarkable is the close approximation of the absolute figures in these countries, which range from 1.0 to 1.2 per thousand living. This total, naturally, is made up differently in the two sexes, the male genital organs being affected to a much less extent than the female. The gastro-intestinal tract is more frequently attacked in males than in females, and to such an extent as to equalize the total cancer mortality for all sites to that in females. The same remarkable coincidence emerges when the female mortality in different countries is compared. Thus, the total cancer mortality of females in England and Wales, Holland and Japan is approximately the same, but this total is made up differently in the three countries. In England and Wales, cancer of the breast and uterus is nearly twice as common as in Holland, but the deficiency is made up by a greater frequency of cancer of the gastro-intestinal tract in Holland. In Japan, cancer of the breast is relatively unimportant as a cause of death, but there is such mortality from cancer of the uterus as to bring the total female mortality from cancer up to the level of England and Wales and Holland.

A somewhat similar condition has been noticed in cancer of the skin in mice painted with tar. It is exceptional for cancer of the mamma to arise in large series of mice tarred for such long periods that the majority develop cancer of the skin, even if the tar is removed early and the animals survive for many months. Similarly, in mice in which mammary cancer has developed spontaneously and has been removed by operation, tar painting for long periods in many cases failed to induce cancer. Later experiments show that in some animals this disability can be overcome. The rarity of multiple malignant new growths, whether of one organ or of different organs, supplies further evidence of the inhibitory influence of one malignant growth on the development of cancer in other parts of the body.

The Investigation of Population Problems

In a letter to the *Times*, Sir Bernard Mallet, ex-president of the Royal Statistical Society, vice chairman of the Eugenics Society and a vice president of the new International Population Union, points out that questions connected with population, its growth or decline, whether in numbers or in efficiency, mental or physical, are attracting less serious attention in this country—the country of Malthus and the pioneer in vital statistics—than in many others, notably the United States. For us, however, with an alleged overpopulation in Great Britain, coupled with lack of suitable population of British stock in most parts of the empire, the problems are at least as various and practical as those confronting the United States. For the world as a whole the problem is not less urgent if there is any probability of the increase of population continuing at anything like the scale of the last hundred years, with the implications of such increase of pressure on food supplies and on consequent possibilities of national and racial conflict. In response to the need for organized study of these questions, an international union for the scientific investigation of population problems was constituted in Paris last July, at a meeting of scientific representatives of most of the leading countries of the world, as the direct outcome of the World Population Conference held at Geneva in August, 1927. Prof. Raymond Pearl of Johns Hopkins University and director of the Institute for Biological Research at Baltimore, was elected the first president, and it is hoped that work may begin with the opening of an office in Paris early in the coming year. The objects of the union are to organize and encourage research, whether depending on international cooperation or within the separate national units; to coordinate such researches, and to hold a general assembly every three years. The union is bound to "confine itself strictly to scientific investigations" and to "refuse to enter on religious, moral or political discussions, or, as a union, to support a policy regarding population of any sort whatever, particularly in the direction either of increased or of diminished population."

The union has made a start by appointing three commissions to deal with certain fundamental aspects of the population question. The first, on "Population and Food Supply," with Prof. E. M. East of Boston as chairman and Sir Henry Rew as a British member, will be concerned with questions of great importance to this country, such as the biology of population growth, the "optimum" density of population, the part played by artificial limitation of families, and the actual and potential food resources of the world, a matter on which the utmost diversity of opinion exists. The second commission, presided over by Dr. F. A. E. Crew of Edinburgh, with Professor Carr-Saunders among its British members, will deal with "Differential Fertility, Fecundity and Sterility." Although the effect of the differing fertility of social classes in this country on the character of our population has been clearly indicated by the work of the Eugenics Society, much remains to be done. The third commission, with Prof. Corrado Gini of Rome as chairman and Professor Malinowski and Captain Pitt Rivers as the British representatives, is to deal with the "Vital Statistics of Primitive Races." Much attention has of late years been given to such questions as the causes of the depopulation of the Pacific Islands, and the effects of their repopulation by immigrant races. To the British, who are responsible for

many native races, they are of great importance. National committees composed of leading economists and scientists have already been formed in France, Holland, Belgium, Spain, Switzerland, Scandinavia, Italy and the United States. The American committee, which has taken the leading part from the first, is backed by the two great American research councils; and the Italian committee is magnificently supported by bankers, associations of industrial employers and labor, and agriculturists. Both are therefore able to give substantial support to the international union and to research within their own borders. As regards the British committee, encouraging support for its formation has been received from leading members of the Royal Statistical and Geographical societies, the London School of Economics, the Royal Anthropological Institute, the Royal Colleges of Physicians and Surgeons, and from eminent biologists. It is intended early in the autumn to proceed to the formal constitution of a British national population committee, which will have to promote similar committees in India and the dominions.

PARIS

(From Our Regular Correspondent)

Nov. 7, 1928.

Dr. Charles Nicolle

Dr. Nicolle, director of the Institut Pasteur in Tunis, who was awarded the Nobel prize in medicine for 1928 for his researches on typhus, was born at Rouen in 1866. He was a pupil of Duclaux, Metchnikoff and Roux. He began his career as professor in the Ecole de médecine de Rouen, where he created a center for microbiologic studies. In 1903, he accepted a call to Tunis to organize the Institut Pasteur. With his collaborators he has studied the diseases that concern more particularly northern Africa: undulant fever, kala-azar, bilharziasis, trachoma and, especially, typhus. He discovered the mode of transmission of typhus and pointed out the measures of protection. He is a national associate member of the Académie de médecine, and, since 1920, has been a corresponding member of the Académie des sciences. In 1927, the Institut de France awarded him the Osiris prize.

The Municipal Budget of Paris and the Construction of Hospitals

The budget committee of the municipal council met recently to consider the questions arising in connection with the construction, in the suburbs of Paris, of four hospitals of 1,000 beds each, as announced in a previous communication. The project represents an expenditure of 250,000,000 francs (nearly $10,000,000) for the first establishment and an annual cost of 50,000,000 francs (nearly $2,000,000). Dr. Louis Mourier, director general of the Assistance publique in Paris, pointed out how greatly the hospitals are needed. There are at present 3,000 supplementary beds (cots that encumber the wards) in use in the hospitals. Furthermore, the Assistance publique has every year 1,700 active cases of tuberculosis for which hospital accommodations must be secured, and Dr. Mourier has already prevailed on the municipal council to erect at Champrosay a 500 bed hospital for such cases. There are thus still 1,200 more beds needed. Likewise, the lack of hospital beds compels the maternity services to send the puerperants away at the end of nine days, which often jeopardizes the health of the mothers and the new-born. Mourier added that, in connection with the recent castrophe at Vincennes due to the collapsing of a building, he had been painfully impressed with the defective conditions under which the injured had been installed in the Hôpital St. Antoine, for it was almost impossible to make the rounds of their improvised beds. It seems likely, therefore, that the necessary appropriations will be made, in spite of the fact that they will add another heavy burden to the population of Paris, which is already overburdened with taxes.

The Maternity and Students' Dormitory at Caen

M. Poincaré, president of the cabinet, recently dedicated at Caen two important institutions that will aid greatly in solving certain social problems in Normandy. One is the "Maison maternelle," or maternity hospital, established at Bénouville, near Caen, in a magnificent château of the eighteenth century, which is surrounded by nearly fifty acres of woods. The general council of the department of Calvados spared no expense in the equipment of the hospital. In the magnificent rooms of the château, the wards, the nurseries and the auxiliary services have been located and contain all the latest improvements in hospital equipment. But more remarkable than the up-to-date equipment are the principles that have animated the founders of this social enterprise, M. Henri Chéron, senator of the department, and M. Hélitas, the prefect of Caen. There was a desire to solve, as far as possible, the problem of providing hospital facilities for young mothers and their children, so that considerable generosity and liberality are being shown. Prospective mothers, whether they are paying patients or otherwise, will be received three or four weeks before their confinement, and the mother will remain at the hospital for a sufficient time after the delivery. The infants will be kept at the Maison up to two years, and for four years longer, if need be, in the home adjoining. It is hoped that, in this manner, infant mortality will be considerably lowered and that the number of criminal abortions, which are still numerous, will be diminished. The immense natural park about the Maison de Bénouville will be placed at the disposal of the young mothers and the children. Bénouville is only 4 kilometers from the sea, and has an excellent, semimarine climate.

The same day, M. Poincaré presided at the dedication of the Maison des étudiants, erected at Caen, opposite the superb Hélitas stadium. Students will obtain here at a very low cost both food and lodging. An attempt has been made to make the dormitory of 120 rooms as homelike as possible.

At the same time, the foundations for the Sanatorium de Saint-Sever, which, in a few months, will be erected in the center of the forest of that name, are being laid.

The Institute of Phonetics

The Institut de phonétique was established at first in a small room in the top story of the Sorbonne, but it has developed so rapidly and has had so many visitors, both French and foreign, that it has been necessary to find more commodious quarters for it. The city of Paris turned over to it a former school building located in the rue des Bernardins. The courses are to begin this week. The four rooms are large and well suited for clinical purposes. The larger rooms will be used for theoretical studies on the sounds of language, their mode of utterance, and the gestures that accompany them. The others will be used for laboratory or drill courses. A room has been added for the projection of films, by means of which one can study, with all necessary patience, the movements of the lips and the tongue, by which the sounds are modulated. On the floor above is the library. All that has been written on general phonetics, descriptive phonetics, historical phonetics and experimental phonetics will be collected. There are strange looking types of apparatus inviting persons to speak into the horn attached, whereupon a carbon tape records the vibrations in zigzag lines for the purposes of study. The phonograph plays here an important rôle as a laboratory and research instrument, having many different applications. It is used, for example, for the analysis of defects of pronunciation, bad articulation in various diseases of the nervous system, and, in a popular way, for instruction in foreign languages and the securing of a correct pronunciation. The library is one of the most interesting places imaginable. It constitutes the "archives of speech" and contains a vast array of phonographic records covering the walls of two large rooms. These archives were

first established by M. Pathé and were presented by him to the institute. The visitor, just as if he desired to consult a book in a library, asks for a record with a speech by Maréchal Foch or Paul Deschanel, or a declamation by the actor Mounet Sully, or a popular song of any country. The director, M. Pernot, has just returned from Roumania, where he made records of several hundred Romanic songs. All languages are represented here—from the various patois of the provinces of France to such rare languages, to use the French names, as chari-ouadaïen, horyack, oubyl, tchérennisse and tcherchemolesghien.

Fiftieth Anniversary of Bordeaux Medical School

In connection with the beginning of the winter semester of the Faculté de médecine de Bordeaux, the fiftieth anniversary of the founding of the school was celebrated yesterday. M. Dumas, rector of the academy, presided, being assisted by M. Sigalas, dean of the Faculté de médecine. Dean Sigalas gave an account of the history of the Faculté de médecine. Rector Dumas conferred the title of doctor honoris causa of the Faculté de médecine de Bordeaux on Professors Goyanes and Egas Monis, thus paying homage to the researches of these two scientists, who are friends of the University of Bordeaux and of France. The anniversary ceremonies were the prelude to the medical convention termed "the medical week," held at Bordeaux from November 4 to 8, during which many technical questions were discussed.

The International Conference on Trypanosomiasis

The second International Conference on Trypanosomiasis has opened at the ministry of foreign affairs. The conference is being attended by delegates from Belgium, Great Britain, Italy, Spain, Portugal and France. Its purpose is to coordinate the researches of various laboratories that are studying trypanosomiasis in the African colonies and to distribute among them the points to be elucidated. The chairman of the English delegation is W. Ormsby-Gore, undersecretary of state for the colonial ministry. The Belgian delegation is presided over by M. Halewick de Heusch, director general of the colonial ministry; the Spanish delegation by Dr. Lutrario, and the Portuguese delegation by Dr. Aires Kopke. Among the members of the French delegation are Dr. Cognacq, formerly governor of the colonies; the médecin général Boyé, formerly director of the medical services of French Equatorial Africa; Professors Mesnil and Roubaud of the Institut Pasteur, and Brumpt of the Institut de médecine coloniale.

ITALY

(From Our Regular Correspondent)

Oct. 30, 1928.

International Conference on Tuberculosis

The sixth conference of the Unione internazionale contro la tuberculosi was recently held in Rome under the chairmanship of Prof. Raffaele Paolucci. Thirty-nine countries were represented. Mussolini and the Duchess d'Aosta attended the opening session, which took place in Campidoglio. Professor Paolucci recounted what had been done in Italy in recent years to solve the tuberculosis problem, and stated that the law providing for compulsory insurance against tuberculosis, which had just gone into effect, would make 300,000,000 liras available each year, in addition to the already existing resources.

FILTRABLE ELEMENTS OF THE TUBERCULOUS VIRUS

The chief paper on the first main topic, "The filtrable elements of the tuberculous virus," was presented by Prof. Albert Calmette of Paris. It brought out that the first communication (Fontès, 1910) on the possible filtrability of the tuberculous virus was received with general skepticism. Vaudremer, in 1922, confirmed the observation that in cultures on poor mediums (nitrogenous substances) there are filtrable elements. The filtrate produces colonies of acid-resisting bacilli stainable with Ziehl's solution. In 1923, Valtis, on repeating, at the instance of the speaker, the experiments of Fontès, verified them completely. The filtrate inoculated into the peritoneum of the guinea-pig produced glandular lesions but no visible tubercles. In such lesions typical tubercle bacilli were found. It is not yet established what those elements derived from the tubercle bacillus are that are capable of passing through porous porcelain filters. Fontès believes that they are gramophil Much granules.

The discovery of filtrable elements of the tuberculous virus necessitated a revision of the notions previously held on the heredity of tuberculosis. Calmette and his collaborators gave, in 1925, the first experimental demonstration of the possibility of fetal infection by the transplacental route. Later, the speaker, in collaboration with other authors of the Beaudelocque clinic in Paris, performed researches on fetuses, or children born of tuberculous mothers, and kept separate from them after birth. Of twenty-five subjects examined, twenty were found infected with filtrable elements of tuberculous virus, and, in five of these, typical tubercle bacilli were found in various organs. All had filtrable elements in the viscera which, when inoculated into guinea-pigs, produced tubercle bacilli.

Therefore, the speaker holds that transplacental infection is much more frequent than has ordinarily been supposed. These infections are, however, very light and sometimes useful to the organism, on which they confer a certain degree of immunity. The hereditary transmission of a bacillary infection is, on the other hand, a rare event.

In the discussion that followed, Arloing (France), Kirchner (Germany), Petroff (United States), and others, took part. Not all researches to date have given the same results.

THE DIAGNOSIS OF TUBERCULOSIS IN CHILDREN

The introductory paper on "The diagnosis of tuberculosis in children" was given by Prof. Rocco Jemma of Naples. He emphasized that two things are necessary in establishing the diagnosis: (1) whether the child is infected with tuberculosis, and (2) the recognition of the specific nature of a lesion in any part of the body. In the first case, if the infection is latent, the physician should know whether there has been any familial or extrafamilial exposure, or whether the child has had any predisposing diseases. It may also be necessary to resort to biologic and radiologic measures. In the second case, the clinical examination is applicable, supported by suitable laboratory methods.

As for specific hereditary predisposition, the speaker affirmed that the tuberculous impregnation of the immune child by a tuberculous mother is an hypothesis that is not confirmed by experiment. The condition of status lymphaticus is favorable to the development of tuberculosis. Various morbic processes may influence the appearance of tuberculous manifestations; more particularly, measles, pertussis, influenza and syphilis.

The biologic diagnosis of tuberculosis in children (in addition to the examination of the sputum for the presence of bacilli) is based on the various tuberculin reactions, but these do not always reveal whether a focus is active or not. More refined, although not of easy practical application, are the autourine test (Wildbolz), the autoserum test (Imhof), and the examination of the spinal fluid. The deviation of complement, according to the researches of Osumi, is to be regarded as specific; the enzyme test and other tests are still in the experimental stage.

ORGANIZATION OF TUBERCULOSIS PROPHYLAXIS IN RURAL DISTRICTS

Prof. William Brand of London gave an account of the antituberculosis crusade in the rural districts of England. The notification of tuberculous disease is obligatory. Report is

made by the attending physician to the health officer, who records all the cases in his district. The dispensaries constitute the basis of the prophylaxis. These were established in 1887 by Sir R. W. Philip and comprise a center for consultation and diagnosis; a center for scrutiny and observation, and a center for treatment and surveillance of patients not hospitalized. The dispensaries must, in addition, provide for the systematic examination of all persons with whom suspected persons are in direct contact in the home; the surveillance of certain families in which tuberculosis has already occurred, and the launching of publicity campaigns. The dispensaries form part of the public health service, and are directed by regular health officers. The work of the dispensaries, according to the speaker, should be supplemented by the according of financial assistance to needy tuberculous persons; the placement in families of children exposed; the organization of domiciliary treatment, and the creation of public disinfection centers. In the rural districts there are open-air schools for children who have been reported to be tuberculous. The therapeutic establishments comprise sanatoriums, hospitals, preventoriums, village colonies and the like. Recent legislative action permits the local authorities to have recourse to the courts for the obligatory transfer to the hospital of a person affected with contagious pulmonary tuberculosis. The expenses must be borne by the person who requires the transfer. Tuberculous persons are prohibited by law from handling milk that is to be sold to the public. The authorities are aided by strict laws in their attempt to keep cattle free of tuberculosis. Faber presented data on the diffusion of tuberculosis among the rural families of Denmark. Baduel described the work against tuberculosis that has recently been done by the Red Cross in Italy. The general subject of prophylaxis in the crusade was discussed by the delegates of various nations (United States, Germany, Egypt, Finland, Brazil). An address by Martelli, the minister of public finance, on compulsory insurance against tuberculosis in Italy, followed.

Professor Morelli of Pavia spoke of Carlo Forlanini and artificial pneumothorax. Professor Bernard proposed the erection of a monument to Forlanini, and opened the fund by subscribing 2,000 liras. Professor Brauer of Hamburg discussed the subject of surgery in pulmonary tuberculosis, and explained the various forms of thoracoplasty, and other operations.

Associated with the congress was an international exhibit dealing with antituberculosis institutions, publicity methods and statistics.

TURKEY

(From Our Regular Correspondent)

Dec. 9, 1928.

A Turkish Pharmaceutic Codex

In the past the French pharmaceutic codex has been used in Turkey. As the need for a Turkish codex had been manifest for many years, however, the minister of hygiene in 1926 introduced a bill providing for the preparation of a Turkish pharmaceutic codex. The law reads as follows:

Under the direction of the ministry of hygiene a special committee of fifteen members is to be charged with the preparation of a Turkish pharmaceutic codex. The members of this committee are to be appointed by the ministry of hygiene and are to be approved by the prime minister, after which the list is to be passed on to the president for final approval. A president, to be approved by the ministry of hygiene, is to be chosen from among the committee members. Secretarial personnel is to be appointed, and the duration of the work of the committee and the city in which the committee is to meet are to be indicated by the ministry of hygiene. The budget of the ministry is to provide for a fixed remuneration of all committee members.

It is to be the duty of the committee to prepare a Latin, French and Turkish nomenclature pertaining to medical botanic, simple and compound organic and inorganic chemical materials used in the practice of medicine and veterinary medicine, and to state their chemical formulas, their composites and their physical and chemical properties; to indicate methods of examination as to purity; to indicate methods as to the determination of adulteration; to fix maximum and minimum dosage; to indicate methods of preparation of prescriptions; to indicate methods of conservation and prevention of decomposition; to state medicines not susceptible of being used in combination; to indicate the special uses of different medicines, and to list all instruments for use and all kinds and amounts of chemicals, drugs and herbs to be stocked in pharmacies.

The ministry of hygiene is to forward the manuscript of the codex to the prime minister for submission to the president for signature, who will then fix a date for its publication, after which it is to be used by all pharmacies and pharmaceutic depots. On the invitation of the ministry of hygiene, the committee is to meet every five years for the discussion of modifications and supplement in connection with this codex. The manuscript of an appendix is also to be submitted to the president.

After publication of the codex or appendix all pharmacies, pharmaceutic depots and custom-houses are under obligation to conform to the methods of examination and analysis indicated in the codex. The ministry of hygiene is to be responsible for the printing and sale of the codex and appendix. If after publication of the codex the technic at a pharmacy is found not to conform to the codex, punishment according to the pharmacy and drug law will await the pharmacist in charge. This law has been in force since March 3, 1926.

After three years of labor the codex has been completed, 5,000 copies in Latin script being in process of publication. With the beginning of 1929 the codex is to be valid. The ministers of justice, finance and hygiene are charged with the execution of this law.

Dengue Fever

The dengue fever epidemic prevailing in Greece during September and October made preventive measures necessary along the Mediterranean coast. Steamers, boats and vessels coming from Greece have been under strict quarantine, all persons with even slight symptoms being isolated. For several decades dengue fever has not occurred in Turkey, though sand-fly (*Phlebotomus*) fever is never rare in Asia Minor during August and September. The first case of dengue fever occurred during the first week of October in Fethiya near Adalia, the patient having come from Greece during the period of incubation. More than eighty cases occurred in that town. Besides this outbreak, some isolated cases were noted in Smyrna and Adalia. They also were traced to persons having recently come from Greece.

Proposed Public Health Act and Narcotic Law Amendment

The ministry of hygiene has been instrumental in the introduction of bills dealing with public health and narcotics. These bills are at present being given attention in the great national assembly. There is a pressing need for a public health act. There are to be more than 290 articles pertaining to the duties of local and municipal health departments. In regard to canalization, construction of sewerage plants, and provision for clean water and milk supplies, these departments are under strict obligation to observe their responsibilities in these matters in the future. The responsibility for hygiene and sanitation in schools and for the periodic medical examination of all school children, according to the public health act, is to pass from the ministry of public instruction, to the ministry of hygiene. It is expected that such a measure will lead to interesting dis-

cussion. Of vital importance are the regulations concerning canalization, the construction of sewerage plants and the establishment of clean water and milk supplies. It is hoped that, with the strict enforcement of this act, the amelioriation and prevention of present objectionable conditions will be hastened.

Though excessive smoking is often found among the Turkish people and opium is raised in some parts of the country, drug addiction has been of rare occurrence in the past. It has been looked on as a greater disgrace than alcoholism. The increase of drug addiction especially among women, however, has lately caused the government to take severe measures in regard to the control of drugs and narcotics. The secret sale of narcotics has greatly increased since the armistice as narcotics have been introduced in large quantities through the influx of refugee immigrants from Russia. A law regulating and controlling the importation and sale of narcotics has been in force, but it has not been effective because the punishment of offenses has not been sufficiently severe.

BUDAPEST

(From Our Regular Correspondent)

Nov. 22, 1928.

Conference of Psychiatrists

The annual conference of the Hungarian Psychiatrists was held in the spacious conference hall of the university, October 21-23, under the presidency of Professor Rudolf Fabinyi. It was well attended. The first lecture, by Ödön Németh, dealt with some medicolegal questions connected with mental diseases and may be thus summarized: In cases of undisputed mental disease, patients are not legally responsible. From a medical point of view so-called lucid moments during the course of mental diseases do not exist. If a patient under the care of a guardian is cured, his acts are of legal consequence. Whether such an individual may be regarded as cured or not, however, can be decided only by a medical expert. If during guardianship the symptoms of the mental disease seem to have abated, a judge is privileged to decide whether the mental disease may be regarded as cured and, if so, from what date, but he can do this only after hearing the opinion of the medical expert. Individuals on the borderline between mental disease and sanity can be regarded as being legally responsible to an extent equal to that of those under age; if they are incapable of managing their affairs by reason of their deficient mental capacity, the care of a guardian becomes necessary and they are in a class with those alcoholic and narcotic addicts who are unable to manage their affairs. In each case the grade of deficiency must be decided on the grounds of a competent medical examination. According to the Hungarian law, insane persons and persons put under guardianship are permitted to sign legal documents, such as contracts, wills and donations, only if competent psychologists declare them to be legally responsible.

Prof. Charles Schaffer, in an address entitled: "Pathologic Histology and Mental Pathology," stated that the pathologicohistologic changes can be sought for only in mental diseases that are based on the so-called organic cerebral changes. Changes in the central nervous system depend on its constituent elements and the extension of the pathologic processes. According to the pathologic histology a distinction has to be made between the changes in the ectodermic elements and the resulting changes in the mesodermic elements. The mesodermic changes, as regards the central nervous system, originate from external forces, while the changes in the nerve elements may be exogenous and endogenous. Exogenous histologic changes in the nerves may produce a toxic psychosis in two forms: the systematic form as in alcoholism, and the asystematic or disseminated form as in saturnism. Endogenous histologic changes of the nerves are manifested by the imperfect development of the central nervous system, and its progressive degeneration is due to lack of vitality. The degeneration may attack both main nerve elements collectively or separately. Thus three chief forms can be distinguished: (*a*) abiotrophia neuronalis, the progressive degeneration of single neuron systems; (*b*) abiotrophia neurogliosa, the degeneration of the neuroglia, and (*c*) abiotrophia generalis, the degeneration (as in idiocy) of all the ectodermic elements. In the pathologicohistologic changes of the central nervous system, typologic and structural distinctions have to be made. The type and structure of the pathologic process account for its pathogenesis; on the other hand, the localization of the process defines the syndrome.

Prof. Paul Ranschburg, in his lecture entitled: "Psychology and Psychiatry" considered the two psychologicopsychiatric questions: (1) Can any other purely physical or natural science be substituted for psychology? (2) and if not from what psychologic direction can psychiatry expect the most benefit? The professor subjected psychology to exhaustive examination. In his opinion psychiatry needs psychology, and particulary that branch which acknowledges the reality of psychic phenomena independently from theoretical and metaphysical reasoning, and which reckons also with their extracausality and at the same time admits the close connection of the psychic series not only with the nervous system and the internal secretory system but also with the entire organism.

Other noteworthy lecturers and their subjects were as follows: Irene Kauffmann, "The Control of the Malaria Treatment of Paresis by Psychologic Examinations"; Professor Kollarits, "The Importance of the Suboccipital Puncture"; Stephen Somogyi, "The Question of the Disease Unit in Psychiatry"; Mark Goldberger, "The Mischievous Child"; Louis Fischer, "Meningisms Occurring After Lumbar Punctures"; Eugen Hönigsfeld, "Styles and Spiritual Styles"; Joseph Sombor, "The Value of Man," and Julius Balta, "The Effect of Liver Preparations on Anemia."

BERLIN

(From Our Regular Correspondent)

Dec. 1, 1928.

Protection Against Industrial Noise

There are few branches of industry in which work is accomplished without noise, whereas there are many in which the noise is so great that the ears of the workmen suffer from it. That is not true of all workmen, however, as some persons are able to work for long periods amidst loud noise without sustaining any ear disorder or weakening of hearing; but the percentage of such persons is not high. According to recent statistics, it has been found that in boiler works about 72 per cent of the workmen have an impaired sense of hearing. A large percentage of weavers also, especially those employed on heavy cloth and carpet looms, have impaired hearing. Exact figures cannot be given as yet, for the present statistical material is based on investigations in Russia and is not comparable with German statistics. Investigators in this field have reached the conclusion that in intensely noisy establishments the impairment of hearing is in direct relation to the number of years of service. The workmen may not be aware of their impairment. The important question is, When and whereby does such impairment gain practical importance? There are many otherwise robust workmen employed in the noisy industries—especially ship building—who are embittered by their loss of hearing (due to noise), which prevents them from attending social gatherings, concerts or the theater, from conversing with friends or from listening to the radio. There are industrial plants that are compelled to discharge employees who are hard of hearing because they endanger the safety of their fellow employees. It is especially difficult for a person who is hard of hearing to find new employment. Professor Barkhausen of

Dresden has invented an ingenious type of phonometer (manufactured by the Siemenswerke) for the measurement of the intensity of sounds. Several otologists—among others, Professor Beck of Heidelberg, Sanitätsrat Peyser of Berlin, and Professor Holtzmann of Baden—have made measurements of sounds in a number of industrial plants and have established that the metal trades and weaving produce the most noise. With the same apparatus, Dr. Peyser has tested, by means of a new method evolved with the aid of the technical engineer Gebhardt, to what extent one can diminish the effects of noise by putting cotton, wax or other agents in the ears. The unit of measurement with the apparatus that Barkhausen employs is the phon. He found that in riveting (boiler works, ship building) the noise produced amounted to from 13 to 15 phon. Peyser's tests showed that, with cotton alone, the noise can be reduced 1 phon, but with oiled gauze it can be reduced from 1 to 3 phon. The details of these experiments awakened great interest at the first international congress of otology, held in Copenhagen, as did likewise the announcement of the organized crusade against impaired hearing caused by noise in industrial plants, which was recently launched in Germany. The Deutsche Gesellschaft für Gewerbehygiene has appointed a committee to combat this condition (Ausschuss zur Bekämpfung gewerblicher Lärmschwerhörigkeit). It will soon be able to begin its practical work. A special bulletin containing information for workmen employed in shops in which their hearing is endangered will appear soon. Later a book of general information will be published. Furthermore, physicians, technical engineers and supervising officers in the industries will carry on investigations in the industrial plants in which noise is intense, with a view to finding ways and means of combating it through the aid of muffling and isolation devices, or, if feasible, through modification of methods of manufacture. The Reichswirtschaftsrat (economic council) proposed, some time ago, to the Reichsarbeitsministerium (ministry of labor) that persons losing their hearing completely in the metal industries be indemnified by the extension of the application of the accident insurance law so as to include that occupational disorder.

Results to Date of the Federal Law for the Control of Venereal Disease

Nov. 1, 1928, the federal law for the control of venereal disease had been in operation for one year. While a year is not sufficient time in which to determine the nation-wide value of such a comprehensive law as this, records show that venereal diseases in Greater Berlin have decreased. The Grossberliner Aerztebund (physicians' league), at the instance of the dermatologists and urologists, kept a record of all new cases of infection for a period of seven days; namely, from June 21-27, 1927, and from June 19-25, 1928. Practically all physicians participated in the collection of statistics, as did likewise the public ambulatoriums, the policlinics and the ambulatoriums of the *krankenkassen*, so that the figures are reliable. According to a report by Dr. F. Lesser, published in the *Deutsche medizinische Wochenschrift*, the statistics show that both gonorrhea and syphilis have diminished since the law became effective. He estimates that syphilis has decreased 30 per cent, and gonorrhea, 14.5 per cent, as compared with the previous year.

The decrease, in fact, is greater than is revealed by the actual figures, for, previous to the passage of the law, a considerable number of cases of venereal disease treated by lay practitioners were not reported in the statistics of 1927, whereas most of such cases are now brought to the attention of regular physicians. In addition, owing to the more intensive search for the source of infection, more venereal patients are brought under medical treatment. Furthermore, the publicity campaign carried on by means of lectures and news articles has reduced self-treatment to some extent, while the law's prohibition of distant treatment (elimination of the pharmacist) and the increase of denunciation for sexual contagion have increased the number of patients seeking medical treatment.

There are no reliable statistics on the status of venereal disease before the war and immediately after the war. For one day, April 30, 1900, a federal census of cases of venereal disease was undertaken, but the participation of the physicians was so deficient that a reliable computation was impossible. A second census was taken from Nov. 15 to Dec. 14, 1919. The high figures established by this census cannot be regarded as a suitable basis for comparison, since, at the close of the war, the conditions were abnormal. The statistics, however, do show the numerical relations of the two diseases to each other. Before the war, the relation was as 3 to 1, gonorrhea being three times more frequent than syphilis. During the war and the postwar period, the relation changed to 2 to 1. In the late postwar period, a gradual decline of venereal diseases occurred. Syphilis declined faster than gonorrhea, so that in June, 1927, the relation was as 5.3 to 1, as against gonorrhea. The last federal census (Nov. 15 to Dec. 14, 1927) showed the relation for Greater Berlin to be 5.4 to 1, and according to the last Berlin statistics (June, 1928), the relation was 6.5 to 1. Up to 1927, ulcus molle had shown a sharp decline, but in 1928 there was an increase of 18 per cent. Gonorrhea and syphilis decreased after the abolition of the "morals police" *(sittenpolizei)*. Special attention is called to this, as the doing away with police supervision was an experiment the outcome of which could not be foreseen. Lesser believes that the statistics justify the conclusion that the law has stood the acid test so well because of the tireless energy of the newly created health officers at the Hauptgesundheitsamt (bureau of health) and the intensive cooperation of the physicians of Greater Berlin.

Incidence of Infantile Paralysis in Germany; the Institution of Prophylactic Measures

Since the war, only the administrative district of Kassel (1922) has suffered an epidemic of infantile paralysis (20 cases per hundred thousand of population), though sporadic cases have constantly occurred. In 1926, there was a considerable increase of the disease throughout Germany (2.6 per hundred thousand of population), the chief focus being in Erfurt, with a morbidity of 15.4. In 1927, the incidence for the *reich* rose to 4.3, and in Leipzig to 29.2. A large area in central Germany and two administrative districts in Westphalia and East Prussia suffered especially. In both years, there was a sharp upward thrust in August and an equally sharp decline in September or October. Apparently the endemic cases are responsible for the epidemics, but the cause or causes for the flareup are not fully understood. Prophylactic measures consist in compulsory notification, the same treatment in acute cases that is given in other infectious diseases (isolation, disinfection) and, particularly, the distribution of bulletins calling the attention of physicians to the diagnosis of the infection, which is often not recognized promptly, and to the most practicable methods of treating the paralysis.

Marriages

O. MARVIN CRENSHAW, Lebanon, Ky., to Miss Mary Cordelia Bickett of Loretto, in Chicago, Nov. 7, 1928.

LOUIS H. SKIMMING, Middletown, Ohio, to Miss Hazel Johnson of Camden, Nov. 2, 1928.

BENGT NORMAN BENGTSON, Chicago, to Miss Martha Timke of Elmhurst, Ill., Oct. 22, 1928.

RALPH W. BRUNER to Miss Ruth Sagebiel, both of Jeffersonville, Ind., Dec. 10, 1928.

SOL W. GINSBURG, New York, to Miss Ethel Lieberman, Dec. 17, 1928.

Deaths

Lucien Howe ⊕ Boston; Long Island College Hospital, Brooklyn, 1871; Bellevue Hospital Medical College, New York, 1872; M.R.C.S., England, 1873; chairman of the Section on Ophthalmology of the American Medical Association, 1895-1896; emeritus professor of ophthalmology, University of Buffalo School of Medicine, where he served about thirty years; member of the Medical Society of the State of New York and the American Academy of Ophthalmology and Oto-Laryngology; past president of the American Ophthalmological Society; for many years in charge of the Buffalo Eye and Ear Infirmary and on the staff of the Buffalo General Hospital; was responsible for the so-called Howe Law passed in New York in 1890, which was the first law for the prevention of ophthalmia neonatorum, by providing for the use of prophylactic drops in infants' eyes, and the forerunner of similar law in practically every state; in 1926 gave $250,000 to Harvard University to establish a laboratory, known as the Howe Laboratory of Ophthalmology, of which he was director; in 1927 was awarded the Leslie Dana Gold Medal, given annually by the National Committee for Prevention of Blindness in cooperation with the Missouri Association for the Blind, to the person who did most for the conservation of vision during the preceding year; author of "The Muscles of the Eye," "Universal Military Education," and "The Hereditary Eye Defects"; aged 80; died, Dec. 27, 1928, of pneumonia, at his home in Belmont, Mass.

Joseph Sailer ⊕ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1891; chairman of the Section on Gastro-Enterology and Proctology of the American Medical Association, 1927-1928; professor of clinical medicine at his alma mater and formerly demonstrator of anatomy, and instructor, assistant and associate professor of clinical medicine; professor of diseases of the stomach and intestines at the Philadelphia Polyclinic, 1902-1909, now the Graduate School of Medicine of the University of Pennsylvania, where he was professor of clinical medicine; member of the Association of American Physicians, the American Gastro-Enterological Association and the American Society for Clinical Investigation; past president and member of board of directors of the American Heart Association; founder and first president of the Philadelphia Heart Association; served in France during the World War; physician to the Babies', Presbyterian, and the Philadelphia General hospitals; contributed to medical journals many theses on diseases of the heart; aged 61; died, Dec. 31, 1928, of heart disease.

Clarence Mason Williams ⊕ Alpena, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1901; member of the Radiological Society of North America; secretary of the Alpena County Medical Society; veteran of the Spanish-American and World wars; formerly health officer of Alpena; at one time connected with the U. S. Public Health Service and the U. S. Veterans' Bureau; on the staff of the Donald McRae Hospital; aged 53; died, Dec. 11, 1928, of heart disease.

Maude **Mary Kelly** ⊕ Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1917; formerly assistant demonstrator of obstetrics at her alma mater; served overseas during the World War with the American Committee for Devastated France; was decorated by the French government; formerly on the staff of the Philadelphia General Hospital; on the staff of the Babies' Hospital; aged 51; died, Dec. 5, 1928, of carcinoma.

Eric Kline Bartholomew ⊕ Chicago; Medical Department of the University of Illinois, Chicago, 1907; member of the American College of Physicians; assistant clinical professor of medicine, Loyola University School of Medicine; served during the World War; on the staffs of the Lutheran Memorial Hospital and St. Mary of Nazareth Hospital; aged 47; died, Dec. 18, 1928, of epidemic cerebrospinal meningitis contracted from a patient.

Garland Benjamin Foscue ⊕ Waco, Texas; Long Island College Hospital, Brooklyn, 1883; delegate to the American Medical Association in 1923 and 1926; past president of the State Medical Association of Texas; at one time secretary of the Texas State Board of Medical Examiners; on the staff of the Colgin Hospital Clinic and the Providence Sanitarium; aged 68; died, Dec. 3, 1928, at the home of his daughter in Dallas.

Frank William George ⊕ Worcester, Mass.; Harvard University Medical School, Boston, 1902; member of the War; consulting orthopedic surgeon to the Holden (Mass.) District Hospital, Louis Pasteur Hospital, Worcester, and the Sturdy Memorial Hospital, Attleboro; aged 50; died, Dec. 18, 1928, of heart disease.

Achille Murat Willis ⊕ Richmond, Va.; Medical College of Virginia, Richmond, 1904; formerly professor of surgery at his alma mater; member of the Southern Surgical Association; past president of the Richmond Academy of Medicine; aged 50; surgeon in charge of the Johnson-Willis Hospital, where he died, January 3, of a self-inflicted bullet wound.

William E. Barker, Plaquemine, La.; Medical Department of the Tulane University of Louisiana, New Orleans, 1885; member of the Louisiana State Medical Society; formerly member of the parish school board and parish coroner; aged 68; died, Dec. 10, 1928, of cerebral hemorrhage.

Raymond Aaron Leiby, Newhope, Pa.; Jefferson Medical College of Philadelphia, 1920; member of the Medical Society of the State of Pennsylvania; aged 35; died, Nov. 12, 1928, of injuries received when the automobile in which he was driving was struck by a train.

Eli L. Youngblood, Boonville, Ind.; Kentucky School of Medicine, Louisville, 1893; Chicago Homeopathic Medical College, 1894; member of the Indiana State Medical Association; aged 68; died, in December, 1928, at the Walker Hospital, Evansville, of heart disease.

Paul Gibson Manley, Espes, Ala.; Miami Medical College, Cincinnati, 1879, Bellevue Hospital Medical College, New York, 1884; past president of the Wabash County (Ill.) Medical Society; aged 73; died in Evanston, Nov. 27, 1928, of arteriosclerosis.

Charles Ambrose McCarthy, Lawrence, Mass.; University and Bellevue Hospital Medical College, New York, 1899; formerly member of the school committee, and city physician; aged 56; died suddenly, Dec. 9, 1928, of cerebral hemorrhage.

John Sawyer Hitchcock, Proffit, Va.; University of Maryland School of Medicine, Baltimore, 1893; veteran of the Spanish-American War; for many years head of the health department of Massachusetts; aged 59; died, Dec. 14, 1928.

Jacob Wolf ⊕ Atlantic City, N. J.; Medical College of Ohio, Cincinnati, 1891; member of the Medical Society of the State of Pennsylvania, and the American College of Physicians; aged 58; died, Nov. 17, 1928, of cerebral hemorrhage.

Earl L. Hendricks ⊕ Lanark, Ill.; Northwestern University Medical School, Chicago, 1903; formerly secretary of the Carroll County Medical Society; served during the World War; aged 48; died, Dec. 15, 1928, of scarlet fever.

Ray Marshall Tinney Norton, Kan.; Kansas City (Mo.) Medical College, 1903; member of the Kansas Medical Society; served during the World War; aged 53; died, Nov. 24, 1928, in a local hospital, of carcinoma of the stomach.

John MacDowell Carnochan ⊕ Princeton, N. J.; Medico-Chirurgical College of Philadelphia, 1899; physician in charge of the Isabella McCosh Infirmary of Princeton; aged 55; died, Dec. 12, 1928, of nephritis and arteriosclerosis.

Harry P. Klier ⊕ Elgin, Ill.; Rush Medical College, Chicago, 1925; on the staffs of St. Joseph's and the Sherman hospitals; aged 35; died, Dec. 28, 1928, of epidemic cerebrospinal meningitis, contracted from a patient.

Frank M. Clement, Chicago; Albany Medical College, Albany, N. Y., 1890; formerly on the staffs of the Englewood, St. Francis and St. Bernard hospitals; served during the World War; aged 65; died, Nov. 14, 1928.

Andrew Harris Butler, Memphis, Tenn.; University of Tennessee College of Medicine, Memphis, 1913; member of the Tennessee State Medical Association; aged 38; died, Dec. 4, 1928, of myocarditis and chronic nephritis.

Dominique J. Gragnon, Breaux Bridge, La.; Medical Department of the Tulane University of Louisiana, New Orleans, 1901; member of the Louisiana State Medical Society; aged 48; died suddenly, Nov. 15, 1928.

Samuel C. B. Medley, Roanoke, Va.; Leonard Medical School, Raleigh, N. C., 1912; aged 45; on the staff of the Burrell Memorial Hospital, where he died, Dec. 2, 1928, of bronchopneumonia, following influenza.

Harley E. Funk, Culbertson, Neb.; Ensworth Medical College, St. Joseph, Mo., 1909; member of the Nebraska State Medical Association; aged 46; died, Dec. 5, 1928, of pneumonia, at the home of his brother in Wray.

Frank K. Williams, Jasper, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1923; served during the World War; aged 35; died, Nov. 3, 1928, at the home of his parents in Townly.

Franklin John Gable, Reading, Pa.; Jefferson Medical College of Philadelphia, 1906; served during the World War; formerly city councilman; aged 45; died, Nov. 21, 1928, of cerebral hemorrhage.

Samuel Arthur Van Osdel ✠ Auburn, Neb.; Ensworth Medical College, St. Joseph, Mo., 1902; on the staff of the Auburn City Hospital; aged 52; died, Dec. 3, 1928, of chronic interstitial nephritis.

Hugh R. Van Zant, Edmonton, Ky. (licensed, Kentucky, 1894); member of the Kentucky State Medical Association; secretary of the Metcalfe County Medical Society; aged 72; died, Nov. 13, 1928.

Samuel McMurrich McLay, Woodstock, Ont., Canada; University of Toronto Faculty of Medicine, 1910; served during the World War; chairman of the board of education; aged 47; died, Nov. 2, 1928.

George Marion Cummins, Hamilton, Ohio; Medical College of Ohio, Cincinnati, 1900; past president of the Butler County Medical Society; aged 52; died, Dec. 8, 1928, of cerebral hemorrhage.

Chauncey Elwood Ruth, Philadelphia; Jefferson Medical College of Philadelphia, 1927; aged 26; died, Dec. 11, 1928, at St. Agnes' Hospital, following an operation for Hirschsprung's disease.

William Olanda Sullivan, Newbern, Tenn.; Medical Department University of Tennessee, Nashville, 1897; member of the Tennessee State Medical Association; aged 54; died, Nov. 30, 1928.

Frank C. Collins, Georgetown, Ky.; Medical College of Ohio, Cincinnati, 1883; aged 68; on the staff of the John Graves Ford Memorial Hospital, where he died, Dec. 24, 1928, of pneumonia.

Samuel J. Liggett, Philadelphia; Jefferson Medical College of Philadelphia, 1878; member of the Medical Society of the State of Pennsylvania; aged 69; died, Oct. 28, 1928, of pneumonia.

Eugene Townsend, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1877; aged 73; died, Nov. 6, 1928, following an operation for carcinoma of the intestine.

Frank Lee Sayre, Florence, Ky.; Miami Medical College, Cincinnati, 1893; aged 62; died, Nov. 22, 1928, at St. Elizabeth's Hospital, Covington, of chronic nephritis and heart disease.

Charles Alonzo Barnard, Providence, R. I.; Medical Department of the University of the City of New York, 1879; aged 85; died, Dec. 18, 1928, as the result of a cerebral hemorrhage.

James E. Malone, Louisburg, N. C.; Bellevue Hospital Medical College, New York, 1875; member of the Medical Society of the State of North Carolina; aged 77; died, Nov. 29, 1928.

Karl Louis Hiss ✠ Toledo, Ohio; Rush Medical College, Chicago, 1923; aged 29; on the staff of the Toledo Hospital, where he died, Dec. 6, 1928, of acute myelogenous leukemia.

Alfred H. Prescott, Woodstock, N. B., Canada; McGill University Faculty of Medicine, Montreal, 1896; aged 53; died, Nov. 1, 1928, at Caribou, Maine, of pernicious anemia.

Clyde Ennis Harrison, Chicago; Chicago College of Medicine and Surgery, 1917; aged 36; died, Nov. 26, 1928, of basal meningitis, following an operation for mastoiditis.

John D. Cook, Cooksville, Ga.; University of Louisville (Ky.) School of Medicine, 1872; aged 80; died, Dec. 3, 1928, at the home of his daughter in Atlanta, of paralysis.

John Bell Ledlie ✠ Saratoga Springs, N. Y.; Albany Medical College, 1893; on the staff of the Saratoga Hospital; aged 63; died, Dec. 13, 1928, of heart disease.

Charles Frederick Thompson, Long Beach, Calif.; Eclectic Medical Institute, Cincinnati, 1888; aged 75; died, Dec. 1, 1928, of chronic interstitial nephritis.

Gaetano Thomas Ribetti ✠ Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1899; aged 57; died, Nov. 26, 1928, of carcinoma of the stomach.

Sylvester J. Bridenstine ✠ Seattle; State University of Iowa College of Medicine, Iowa City, 1875; aged 76; died, Nov. 25, 1928, at the Columbus Hospital.

David W. Lewis ✠ Inwood, Iowa; State University of Iowa College of Medicine, Iowa City, 1892; aged 69; died, Dec. 20, 1928, of carcinoma of the colon.

Fred Ward Powell ✠ Honesdale, Pa.; Bellevue Hospital Medical College, New York, 1888; aged 63; died, Oct. 28, 1928, of a self-inflicted bullet wound.

Wayne L. Stillman ✠ Odebolt, Iowa; Medical Department of the University of Illinois, Chicago, 1902; aged 55; died suddenly, Dec. 8, 1928, of heart disease.

Arthur William Fisher, Williamson, N. Y.; University of Michigan Medical School, Ann Arbor, 1912; aged 56; died, Sept. 8, 1928, at a hospital in Sodus.

John Webb Lee, Porterdale, Ga.; Atlanta Medical College, 1861; Confederate veteran; aged 87; died, Dec. 5, 1928, at the home of his daughter in Columbus.

Jesse Llewellyn Massie, Smithsburg, Md.; Cincinnati College of Medicine and Surgery, 1875; aged 79; died, Dec. 12, 1928, of carcinoma of the liver.

John W. Tribble, Bloomfield, Mo.; Medical Department University of Nashville, 1880; aged 79; died, Dec. 1, 1928, of arteriosclerosis and angina pectoris.

Charles W. Graham ✠ Milwaukee; Detroit College of Medicine and Surgery, 1896; aged 59; died, Nov. 5, 1928, of diabetes mellitus and septicemia.

James Robert Anderson, Morganton, N. C.; Medical Department University of Louisiana, New Orleans, 1882; aged 67; died, Dec. 13, 1928.

DeWitt C. Tyler, Clifton, Kan.; Rush Medical College, Chicago, 1881; aged 78; died, Dec. 3, 1928, at St. Mary's Hospital, Kansas City, Mo.

William Thomas Woodley, Sea Level, N. C.; Medical College of Virginia, Richmond, 1893; aged 86; died, Nov. 1, 1928, of acute myocarditis.

Frank Elmer Herriott, Carnegie, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1898; aged 58; died, Nov. 28, 1928, of uremia.

Charles Krusemarck ✠ Chicago; Rush Medical College, Chicago, 1879; aged 74; died, Dec. 28, 1928, at La Porte, Ind., of chronic myocarditis.

Remer Young Lane, Orange Park, Fla.; College of Physicians and Surgeons, Baltimore, 1884; aged 67; died, Dec. 3, 1928, of heart disease.

James H. O'Reilly, Louisville, Ky.; University of Louisville School of Medicine, 1876; aged 76; died suddenly, Dec. 14, 1928, of heart disease.

Thomas James Kay, New Orleans; Medical Department of the Tulane University of Louisiana, New Orleans, 1908; aged 56; died, Dec. 9, 1928.

Isidor Feldman, New York; Cornell University Medical College, New York, 1906; aged 58; died, Dec. 6, 1928, of chronic endocarditis.

Herbert L. Baker, Lebanon, Ind.; Homeopathic Medical College of Missouri, St. Louis, 1904; aged 47; died, Dec. 21, 1928, of influenza.

John T. Kimberlin, St. Joseph, Mo.; Kentucky School of Medicine, Louisville, 1885; aged 70; died, Nov. 28, 1928, of angina pectoris.

William Eli Minor, Kansas City, Mo.; University Medical College of Kansas City, 1889; aged 63; died, Dec. 15, 1928, of carcinoma.

John M. Carrington, Mount Laurel, Va.; Vanderbilt University School of Medicine, Nashville, 1885; aged 68; died, Nov. 7, 1928.

Edward Thomas Mason, Savageville, Va.; University of Maryland School of Medicine, Baltimore, 1891; aged 58; died, Dec. 5, 1928.

John O. Smith, Dover, Tenn.; Vanderbilt University School of Medicine, Nashville, 1877; aged 74; died, Dec. 10, 1928, of pneumonia.

Allison H. Jackson, El Reno, Okla.; College of Physicians and Surgeons, Keokuk, Iowa, 1875; aged 76; died, Nov. 29, 1928.

Agnes M. Slough, Allentown, Pa. (licensed, Pennsylvania, 1883); aged 78; died, Dec. 20, 1928, of cerebral hemorrhage.

Wright Robertson, Port Orange, Fla.; Kansas City (Mo.) Medical College, 1905; aged 47; died, Dec. 4, 1928, of pellagra.

Jacob Lincoln Davis, Alburnett, Iowa (licensed, Iowa, 1890); aged 68; died, Nov. 23, 1928, of chronic prostatitis.

John D. Kerlin, Gettysburg, Ohio; Medical College of Ohio, Cincinnati, 1886; aged 63; died, Dec. 24, 1928.

Ward B. Middleton, Millersburg, Ohio; Medical College of Ohio, Cincinnati, 1885; aged 69; died, Dec. 8, 1928.

Walter A. Ford, Philadelphia; Jefferson Medical College of Philadelphia, 1882; aged 74; died, Nov. 28, 1928.

Correspondence

EARLY WORK ON TULAREMIA

To the Editor:—At the annual meeting of the Utah State Medical Association, Salt Lake City, Utah, Oct. 3-4, 1910, typical cases of human tularemia were described by Dr. R. A. Pearse of Brigham City, Utah. In this paper (*Northwest Med.*, March, 1911) Dr. Pearse stated that he saw many of the patients and treated them successfully. He was recognized as a local authority on this type of infection. It was well known by him and by all the old settlers in Box Elder County that the disease was more prevalent in seasons when the rabbits were numerous. Of course, the etiology of *Bacterium tularense* and the mode of transmission were not proven. Any work on this subject would not be complete without a record of the effort made by Dr. R. A. Pearse while he was actively engaged in a scattered country practice over a large territory where he had meager laboratory facilities, no cooperation and it required his full time to earn a living.

W. LEROY SMITH, M.D., Salt Lake City.

PYROXYLIN LACQUERS FOR PLASTER CASTS

To the Editor:—In orthopedic cases requiring long immobilization by plaster, it has been a considerable problem to keep casts clean enough so that they may be decently and comfortably worn during the specified time required for treatment of the condition. Their preservation must be principally through protection of the surfaces, and after trying various coatings for this purpose I have found that the pyroxylin lacquers, advertised as Duco, etc., prove most satisfactory. These paints are essentially a thin layer of celluloid, and provide a nonporous, water-proof, elastic covering for casts which will not chip or split and which may be cleansed by any of the usual solvents excepting acetone. Application by either brush or air pressure is satisfactory, although the latter gives smoother results. In jackets and spica casts for children which can be bivalved, a coating both inside and out not only protects the plaster from the usual extraneous soiling and moisture but also very effectively protects the cast from excretions which may be washed away with soap and water. The result of this simple expedient is a clean cast, less skin irritation, and a much more pleasant convalescence.

JESSE L. CARR, M.D., San Francisco.

VALE I-ON-A-CO?

To the Editor:—Some while back, a year or so, THE JOURNAL commented on the claims of one Wilshire, who was offering a magic belt for sale on the Pacific Coast, and who had headquarters in San Francisco. Your comment was to the effect that the belt for healing purposes was of no value.

A postmortem is now in order. For the information of the uninitiated, a premortem might be advisable. This man Wilshire, a former real estate promoter of Los Angeles, is now deceased, but during his last year or so of life he surely made the welkin ring in the entire coast section. He had a "Magnetic Belt" which cost $3 to manufacture and which he sold for $57—and which would cure all diseases. Offices were opened in dozens of cities and towns in the coast region—one in my town of Palo Alto, Calif. Many prominent people of the town went in to have a "delightful free treatment" and hundreds of belts were sold. That was some years back. The name of his belt was "I-on-a-co."

As stated, Mr. Wilshire is dead. All of the centrally located and brilliantly lighted offices are closed. The full-page rotogravure Sunday advertisements in the big newspapers occur no more. I have not seen or heard of the wonderful epoch-making magnetic cure-all for months. It has completely fizzled out. I suppose the dear public who bought belts at last now realize they were swindled and are ready for a new form of the swindling game.

Under the magic of intensive advertising and high-powered salesmanship of that time, it is interesting to note that belts were used on animals as well as on human beings—and many a dog or cat slept each night unconscious of the magic ring of leather and wire that was encircling the pillow on which it reposed. I know of one man who placed the contrivance on his cow for some suspected or real infirmity. But the curtain is now down, the sideshows here and in other places are closed, and on the rubbish piles in the back alleys is all that remains of the glittering wonderful I-on-a-co swindle. Now for the next act for the public amusement!

JOHN C. SILLIMAN, M.D., Palo Alto, Calif.

[COMMENT.—Not entirely has the I-on-a-co disappeared. While Wilshire is dead, there are other equally shrewd promoters who continue to carry on. Rodney Madison, a cruder quack than Wilshire, exploits the I-on-a-co in the Middle West and possibly in the East. Imitations of Wilshire's magic horse collar—the "Amsco," "Huaraco," "Healthbuoy," "Ion-I-Zer," "Long Life Girdle," "O-Wen-A-Co," "Perfectocoil," "Polar Ray," "Restoro," "Solaflux" and "Super-Health-O-Gram," to name a few—are being worked off on the gullible in various parts of the country—and, of course, the usual proportion of newspapers are sharing in the profits of this method of swindling.—ED.]

LEIOMYOSARCOMA OF THE UTERUS

To the Editor:—The communication of Dr. John B. Donaldson (THE JOURNAL, Dec. 15, 1928, p. 1912) commenting on my article entitled "Leiomyosarcoma of the Uterus" (THE JOURNAL, Nov. 17, 1928, p. 1532) implies that it was my evident purpose to belittle the pathologist. Such is not the case. Malignant transformations in uterine fibromyomatous tumors have been the subject of many comprehensive discussions and publications emanating from the laboratories of distinguished pathologists in the past, and I referred to several. I am confident that Dr. Donaldson will agree that there is no unanimity of opinion among these pathologists, and that it is likely that two or more pathologists will fail to concur concerning the malignant potentialities of certain tumors. If the pathologists do not agree, on what basis can the pelvic surgeon exercise his surgical judgment? Gynecologists are familiar with the similarity of the physical characteristics of harmless degenerating processes and edema in fibroids, and I made no claim that my observations in the few cases of leiomyosarcoma coming to my attention established the features mentioned as pathognomonic manifestations. But in view of the fact that sarcomatous alterations in fibroid tumors have received comparatively little attention from clinicians, my paper was presented as an argument for the gross inspection of tumors during operation, so that, if suspicion is aroused by their appearance, the patient will be given the benefit of the doubt and a panhysterectomy rather than a supravaginal amputation will be performed. Occasionally true malignant growths are encountered. It may be of interest to note that the patient whose history I included as case 5 died of metastases in October, 1928.

If my contribution stimulates the interest of pelvic surgeons in this problem and encourages the pathologists eventually to reconcile their differences of opinion, perhaps some evidence constituting a more reliable index of malignant conditions may be offered in the future.

WALTER T. DANNREUTHER, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

COLON DRAINAGE, SIGMOIDOSCOPY AND HISTAMINE TEST

To the Editor:—1. Please describe Norman's method of colon drainage. 2. What is Soper's method of sigmoidoscopy? 3. How is the histamine test made? Kindly omit name. M.D., Wheeling, W. Va.

ANSWER.—1. Dr. N. Philip Norman explains his method of colon drainage in an article entitled "Corrective Treatment of the Common Forms of Enterocolitis" (*Internat. Clinics*, series 33, **1**:50, 1923) as follows:

The nonsurgical mechanical drainage of the colon is a new technic for accomplishing what has heretofore been known as a high intestinal irrigation. The technic takes into account the peristaltic cycle of the colon, which enables one to fill the colon throughout its extent with the irrigating fluid. Peristaltic contractions of the colon are initiated by the passage of food residue into the cecal pouch or the dumping of feces into the rectal pouch. The introduction of fluid into the rectal pouch is an artificial measure for stimulating colon peristalsis. The peristaltic pacemaker seems to be situated in the midportion of the transverse colon at a point commonly known as Cannon's ring. During irrigation, when the rectal pouch is distended, the peristaltic contraction begins at Cannon's ring, splitting into two contraction waves, one traveling toward the cecum and the other toward the rectum. During irrigation the physician is concerned with the contraction wave traveling toward the rectum, which, when approaching the rectum, increases the pressure of the fluid instilled within the rectum, which creates a desire for defecation. The flow of fluid is then reversed, and, instead of flowing into the rectum, it is allowed to escape through the tube into a waste receptable. The sudden decrease of the intrarectal pressure causes an instantaneous dissipation of the contraction wave and reverse peristalsis sets in, propelling the fluid remaining in the rectum and sigmoid to the higher levels of the colon. This process is reenacted until the reverse peristalsis of the lower colon has propelled the fluid into the right half of the transverse colon, when the next stimulus promoting peristalsis will cause the portion of the contraction wave, which is a reverse wave from Cannon's ring to the cecum, to fill the cecum with the instilled fluid. . . . This procedure is kept up until the colon is filled from the rectum to the cecum, and it is possible for the colon to retain from 1 to 1½ gallons of fluid. The time required is from five to seven minutes. The patient is then allowed to go to stool and from fifteen to thirty minutes is required to empty the colonic tract, the colonic peristaltic cycle consisting of a propulsive wave from Cannon's ring to the rectum, a reverse wave from Cannon's ring to the cecum, a mildly propulsive wave from the cecum to Cannon's ring, and a mildly reverse wave from the rectum to Cannon's ring. Whenever a portion of the cecal contents is disgorged to the left side of Cannon's ring, it is expelled during the next cycle.

This technic is designated as a mechanical drainage, because that is its prime purpose.

2. It has not been possible to find a record of any method of sigmoidoscopy known as the Soper method. Dr. H. W. Soper has, however, developed a special technic in connection with the use of the sigmoidoscope in the treatment of rectosigmoid spasm, in infectious conditions of the lower sigmoid and upper rectum, and in obtaining x-ray plates of the lower colon. In rectal or sigmoid contracture, with the sigmoidoscope in place (the patient being in the knee-chest position), he applies a saturated solution of magnesium sulphate to the spastic portion by means of cotton applicators until the spasm is relaxed; or in cases in which the spasm is out of reach of the sigmoidoscope, a lubricated rubber catheter is introduced through the instrument to the height desired and from 30 to 60 cc. (1 to 2 ounces) of the solution is injected by means of a piston syringe. The treatments, in either manner, are continued every second or third day until the spasm is permanently relaxed. In infectious conditions, daily insufflations of equal parts of bismuth subcarbonate and mild mercurous chloride (calomel) are introduced through the sigmoidoscope and catheter by means of a powder blower. In the same way, when x-ray plates are desired, bismuth subcarbonate alone is insufflated into the lower colon, after which the patient is immediately placed in the dorsal position and the plates are made.

3. The histamine test is for the purpose of determining the extent of gastric secretory function. The analysis may be performed in the ordinary manner in from one-half to one and one-half hours after the injection of the histamine, or it may be performed by the fractional method; i. e., a specimen of the secretion is tested every fifteen minutes, beginning at a certain time after the injection. The fractional method is preferable, as it gives a more correct idea of the secretory function, especially in cases of suspected achylia and achlorhydria. The technic is as follows: Eight hours after the patient has eaten a very light meal, such as a cup of rice or a cracker, and a glass of water, he is given a subcutaneous injection of 1 cc. of a 1:1,000 solution of histamine dihydrochloride. A Rehfuss tube is then introduced into the stomach and its contents are aspirated, after which (with the tube in situ) the patient is given 300 cc. of water to drink. At fifteen minute intervals thereafter, for a period of one and a half hours, from 4 to 6 cc. of the gastric contents is aspirated and examined for free hydrochloric acid, lactic acid and blood, as in routine gastric analysis. The injection of the histamine stimulates the gastric secretions and takes the place of the test meal that was resorted to before it came into use.

PREVENTION OF SYPHILIS IN FETUS

To the Editor:—Please tell me the best treatment in the case of a woman pregnant two months and with a negative Wassermann reaction. The husband gave a history of syphilis and a plus Wassermann. I refer especially to the treatment for the unborn child. Please omit name.

M.D., New Mexico.

ANSWER.—It is the commonly accepted opinion that hereditary syphilis is transmitted only through the mother. The question of the course to be pursued in this case, therefore, depends considerably on the history of the father's syphilis, for the older it was when he married the less danger there is of transmission to the wife. If it was 5 years old at the time of marriage it is exceedingly unlikely that he has transmitted syphilis to the wife. If in this case, therefore, the syphilis was an old syphilis when the couple were married, if there are no symptoms of syphilis in the wife at present and her blood Wassermann reaction is negative, the situation is favorable and there is little or no demand for active treatment of the mother. If the husband's syphilis was recent, say less than three 3 years old at the time of marriage, it is desirable to give the mother a course of arsphenamine and mercury therapy, and the earlier it is given in the course of the pregnancy the more likely is it to be effective against infection of the child. Pregnancy is no contraindication to neoarsphenamine and mercury therapy, but the kidneys should be watched carefully.

FURNACE OIL AS A DOMESTIC AND INDUSTRIAL HAZARD

To the Editor:—1. What is the composition of furnace oil? 2. What is the composition of the smoke resulting from the ordinary combustion of furnace oil? 3. What are the bad effects of breathng this smoke on the general health? 4. What are the bad effects of breathing this smoke on the respiratory mucous membranes?

JOSEPH F. BICAK, M.D., New York.

ANSWER.—These questions were referred to Mr. W. P. Yant, supervising chemist of the health laboratory section, Pittsburgh Experiment Station, U. S. Bureau of Mines, Pittsburgh, who replies by permission of the director of the bureau:

1. The term furnace oil commonly designates a trade grade of fuel oil which is sold for use in certain classes of oil-burning domestic furnaces and heaters. It is a petroleum distillate, similar in properties to unrefined kerosene, usually of from 38 to 40 Baumé gravity. As furnace oil is an unrefined product its composition will vary, but its ultimate analysis will be of the order of 84 per cent carbon and 15 per cent hydrogen. The sulphur content varies, but the average is about 0.2 per cent. The term furnace oil, however, is often rather incorrectly used in a broader sense to mean any grade of fuel oil, a general term that may be applied to a variety of petroleum distillates or residues which are used for fuel in power plants, marine boilers, railroad locomotives, and domestic heaters and furnaces. The various grades differ mainly in physical properties, such as gravity and viscosity. The majority of domestic heaters are not suited for using heavy oils. The proportion of impurities in the heavier grades of oil is also relatively small; the sulphur content is usually less than 1 per cent, but the quantity may be higher in the fuel oil derived from high-sulphur petroleum. There may also be a little water and common salt, but the latter is more likely to occur in the type of fuel oil bought for large power stations. There is very little inorganic ash, usually about 0.1 per cent.

2. The composition of the products of combustion from a furnance burning oil depends on the efficiency of the combustion. When a light blue smoke is emitted, analysis of the gas would show about 10 per cent carbon dioxide and 7 per cent oxygen, with the remainder consisting chiefly of nitrogen. Water vapor is also present but is not considered in the ordinary analysis of the gas. If the combustion is not good, carbon monoxide, small amounts of hydrogen, hydrocarbons, and traces of aldehydes may be present. The color in the smoke is due to solid particles of carbon and ash and possibly to traces of liquid particles. The sulphur in the fuel will be present in the chimney gases in the form of sulphur dioxide and possibly as traces of sulphur

trioxide; these will cause the formation of sulphurous and sulphuric acid in any water vapor that is condensed. If visible black smoke and soot, an indication of poor combustion conditions, are present, their composition will be mostly carbon, but the soot deposits will often be greasy with unburned oil. The composition of the gases accompanying the black smoke will be similar to those given for poor combustion.

3 and 4. In undilute or slightly diluted gaseous products of complete combustion of furnace oil, the oxygen content is usually insufficient to sustain life and enough carbon dioxide is present to cause marked stimulation of respiration and headaches after long exposure. However, a person would be rarely exposed to undiluted chimney gases. When combustion is complete and the products are diluted with air to bring the oxygen content up to 20 per cent or more, as is usually the case in homes, there are no particular bad effects of breathing the products of combustion of furnace oil, unless they are irritating and disagreeable. The sulphur dioxide is readily recognized in extremely high dilution, say one or two parts per million, by irritating the throat so as to cause coughing. In higher concentrations it will irritate the eye and respiratory mucous membranes and cause mild to severe conjunctivitis, rhinitis, laryngitis and bronchitis. Persons will not ordinarily endure harmful amounts for periods long enough to cause fatal injury.

The irritating effects from sulphur dioxide and the comments given for oxygen and carbon dioxide in products of complete combustion are also true for conditions of incomplete combustion; in the latter, however, carbon monoxide is also frequently present in amounts ranging from a few tenths of 1 per cent to as much as 1 and 2 per cent in rather exceptional cases. For the ordinary condition, and when considerable dilution has been effected, there is no particular danger to life from carbon monoxide. There are, however, conditions in which a real hazard exists. Also, with incomplete combustion, irritating aldehyde gas may be formed.

There is no particular danger from breathing the smoke of furnace oil in concentrations that persons would ordinarily endure. It should be remembered, however, that the smoke is but a visible portion of the products of incomplete combustion; it is accompanied by invisible gases which may contain enough carbon monoxide to cause discomfort, ill health, and possibly fatal poisoning. Since it is difficult to ascertain without making chemical analysis whether combustion is complete or incomplete and, consequently, whether or not harmful gases are present, persons should always avoid breathing products of combustion from any type of fuel.

CLINICAL THERMOMETRY

To the Editor:—Please inform me as to the accepted mode of clinical thermometry in the better hospitals of America, whether it is rectal or oral? What references are there as to the value of either method? Please omit name.

M.D., China.

ANSWER.—Oral temperature determinations are the accepted mode of clinical thermometry in most American hospitals, except in children or in delirious, unconscious or nervous patients, in whom rectal or axillary readings are obtained and so recorded. As a routine, morning and afternoon, 8 a. m. and 4 p. m., determinations are made with the patient either sitting or lying at rest; readings every four hours are made on operative patients and on those with a morning temperature of 99 F. or more. Under ideal conditions, individual thermometers are assigned to patients; but in most large hospitals this is impossible because of the expense of the considerable breakage. As a substitute the following procedure, which seems to be sanitary and acceptable, may be employed:

The nurse is provided with four or six thermometers, three cotton pledgets, and four glasses containing, respectively, 50 per cent alcohol, weak soap solution, water colored with vegetable coloring, and water. This material is carried in a wire basket. She is instructed to see that her hands are clean and attractive. If the group of patients is large, six thermometers are used, three being passed at a time; if small, four, two being passed at a time. A pledget of cotton is placed in each glass of solution except the one containing alcohol. After removing the thermometer from the glass of water and seeing that the mercury is not above 95 F., the nurse asks the patient to wet his lips and places the thermometer under his tongue; the lips are closed. After three minutes the thermometer reading is made and recorded. The thermometer is cleansed in soap solution, rinsed in the colored water and left in the alcohol for five minutes, after which it is placed ready for use in the glass of water. Pulse and respiration rates are noted and a record made of symptoms or complaints at the same time as the thermometer readings are made. (Harmer: Principles and Practice of Medicine, pp. 165-167.)

POISONING BY ACETONE AND AMYL ACETATE

To the Editor:—I have recently encountered severe gastric symptoms with mild chest involvement in men employed in the use of acetone and amyl acetate, as applied in the tanning industry. I should appreciate very much some articles on these two chemicals as related to their poisoning of the human body. I wish to look up this subject and possibly present to the manufacturer employing these patients what has been written about the subject with a view of having means instituted whereby it can be prevented. Please omit name.

M.D., Philadelphia.

ANSWER.—The tanning industry is one of the few remaining industries in which benzene has not been supplanted, or largely so, by less harmful solvents. In the coatings for some enameled and patent leathers, as much as 60 per cent of the solvent is benzene. On this account, in addition to acetone and amyl acetate exposure there may be other and more toxic agents, such as benzene, toluene, and butyl alcohol. In order to rule out benzene and its homologues as participants in the intoxication, counts should be made of the white blood cells. Leukopenia appears to be characteristic of chronic poisoning from this group. Benzene is poisonous in concentrations above 100 parts per million of air.

Both acetone and amyl acetate are mild intoxicants. Amyl acetate in high concentrations serves as a respiratory and gastric irritant, but in the concentrations commonly employed in lacquers it is regarded as one of the safest available solvents. A concentration of 1,000 parts per million of air has proved harmless under experimental conditions. Acetone is said to be used only to an extent of 10 per cent of the fluid portion of common lacquers. It acts as a defatting agent for the human skin and is thus a possible source of dermatitis. It likewise is a mild gastric and respiratory irritant.

The following references indicate sources of elaborate data on this topic. Protection, apparently, is best secured through mechanical ventilating systems, which keep the vapor concentration of toxic chemicals below the level of harmful action:

Final Report of the Committee on Benzene of the National Safety Council, Chicago, May, 1926.

Report of the Committee on Volatile Solvents Used in Industry, presented to Fifty-Seventh Annual Session of the American Public Health Association, Industrial Hygiene Section, October, 1928.

Final Report of the Committee (Chemical Section of the National Safety Council, Chicago) on Spray Coating, September, 1927.

Report of Committee on Spray Coating, THE JOURNAL, Jan. 21, 1928, p. 231.

Richardson, E. G., and Sutton, C. R.: Explosive Properties of Lacquer-Solvent Vapors, *Indust. & Engin. Chem.* **20:** 187, 1928.

Brown, B. K.: Solvent Structure and Solvent Action, *Indust. & Engin. Chem.* **20:** 183, 1928.

Bridgman, J. A.: Constants of Nitrocellulose Solvents, *Indust. & Engin. Chem.* **20:** 184, 1928.

Hofman, H. E., and Reid, E. W.: Formulation of Nitrocellulose Lacquers, *Indust. & Engin. Chem.* **20:** 687, 1928.

Smyth, H. F., and Smyth, H. F., Jr.: Inhalation Experiments with Certain Lacquer Solvents, *J. Indust. Hyg.* **10:** 261, 1928.

Keyes, D. B.: Solvents and Automobile Lacquers, *Indust. & Engin. Chem.* **17:** 558, 1925.

Callahan, M. J.: Development of Duco Type of Lacquers, *Chemistry and Industry* **47:** 232, 1928.

Solvents and Lacquers, editorial, *Chemistry and Industry* **47:** 255, 1928.

Possible Hazards in the Use of "Duco," THE JOURNAL, March 14, 1925, p. 839.

Meyers, Jerome: Medical and Industrial Findings Among Spray Painters and Others in the Automobile Refinishing Trade in Manhattan, Greater New York, *J. Indust. Hyg.* **10:** 305, 1928.

PITUITARY BODY AND LUSCHKA'S TONSIL

To the Editor:—Is there any evidence of a prenatal relationship between the pituitary body and Luschka's tonsil? Is there any evidence that these two glands have any related physiologic function in the growth and development of the child? Please do not use my name.

M.D., Ohio.

ANSWER.—The embryonic relationship between the developing hypophysis and Seesell's pocket (the upper and anterior part of the foregut) is one of propinquity only. Rathke's pouch, from which the anterior and intermediate lobes of the hypophysis grow, is purely ectodermal; it is derived from the nose and not at all from the foregut. The upper end of Rathke's pocket becomes hypophysis; the lower end was believed to disappear entirely in man. Haberfeld, however, showed in 1909 that the lowest part of it persists in more than 50 per cent of human beings, appearing in the mucous membrane of the roof of the pharynx immediately behind the nasal septum. His report has been confirmed by Pende, Arena and Citelli. The latter describes this pharyngeal hypophysis as a normal structure consisting of an anterior portio verticalis in the mucous membrane and a posterior portio horizontalis in the periosteum. It would therefore be in close relationship with Luschka's tonsil. Citelli states that there is in it some cellular differentiation at birth but normally this differentiation does not lead to the formation of cells characteristic of either the anterior or the intermediate lobe. Pende states that it resembles more closely the

intermediate lobe. In case of removal of the hypophysis or of its disease, this pharyngeal hypophysis might develop beyond the stage of an embryonic remnant and it would appear in Luschka's tonsil.

There is no convincing evidence of an association between the physiologic function of the hypophysis and that of Luschka's tonsil proper, although Strum suggests that the hypertrophy of the latter, which he has noted in cases of hypophyseal deficiency, represents an attempt on the part of Luschka's tonsil to do the work of the hypophysis; but this hypertrophy may be due to other causes, such as bacterial invasion or deficiency of vitamins.

RAT BITE FEVER AND TULAREMIA

To the Editor:—1. What is the treatment of rat bite fever? 2. What are the symptoms, diagnosis (including differential diagnosis) and treatment of tularemia? Please omit name.

M.D., Champaign, Ill.

ANSWER.—1. Neoarsphenamine is a specific for the organism of rat bite fever. Dissolved in cold sterile water (2 cc. for each 0.1 Gm. of drug) it is administered intravenously immediately after the solution is prepared. The usual adult dose is 0.6 Gm. One dose is frequently sufficient to cure. If other doses are necessary they may be given at weekly intervals. During the course of treatment the urine should be tested daily for albumin, and if it is present the drug should be given in smaller doses.

2. Dr. Edward Francis discussed the symptoms and diagnosis of tularemia in THE JOURNAL, October 20, p. 1155, and gave a large number of case reports briefly. Another thorough paper by Dr. W. M. Simpson appeared in the *Annals of Internal Medicine* **1**:1007, 1928. There is no specific drug for *Bacterium tularense*. The treatment is symptomatic. Glands should be incised only when suppuration indicates drainage.

BURNING SENSATIONS IN TONGUE

To the Editor:—A woman, aged 33, has been complaining for the past two years of a burning and stinging sensation on the surface of the tongue; it is not in special location, and in fact is not in the same location all of the time. At times she is entirely free from symptoms. No special food seems to aggravate or start the condition. Physical examination is negative and the patient does not seem to be of a nervous temperament, so that it cannot be accounted for on hysterical grounds. She has consulted numerous physicians over the country, all of whom have given various local mouth washes and applications without results. Could you give me some idea as to the best line of treatment for a condition of this kind? Would cocainization of the sphenopalatine ganglion be of value? Some patients with somewhat similar conditions are relieved after that procedure.

HUGH D. STITES, M.D., Aledo, Ill.

ANSWER.—It is first of all well to test the reaction of the saliva in such a case. If this secretion is not sufficiently alkaline, internal administration of alkalis may be useful. It is also well to watch for possible development of pernicious anemia.

ABNORMAL MENTAL STATES AT MENOPAUSE

To the Editor:—Kindly suggest treatment of abnormal mental states due to approaching menopause. Please omit my name.

M.D., New York.

ANSWER.—While it is true that states of depression and other abnormal mental states are of somewhat frequent occurrence at or about the age of the menopause, it must be remembered that the menopause is a physiologic phenomenon and it is questionable whether the changes incident to it are directly responsible for the mental upsets. It should be remembered, too, that similar disorders are liable to occur in men around the age of 50. There is consequently nothing specific in the way of therapy. Since many different forms of mental disorder may occur at this period it is essential that a diagnosis be made of the nature of the illness, which is sometimes due to organic disease somewhere in the body. Descriptions of the mental disorders occurring at this period of life will be found in any good textbook of psychiatry.

ACTEROL

To the Editor:—What is the therapeutic value of acterol made by Mead Johnson & Company, solution activated ergosterol? Does it contain 100 times the vitamin content of standard cod liver oil? Would you advise its being used in the place of cod liver oil among children? Please omit name and address.

M.D., Oklahoma.

ANSWER.—Acterol (a preparation containing irradiated ergosterol), it is reported, has been withdrawn from the market by Mead Johnson & Company until such time that further animal and clinical experimental studies shall have determined its therapeutic status.

THE AFFLICTION OF THE CZAREVITCH

To the Editor:—There has been a discussion as to a supposed malady of the late czarevitch. Some declare he was a "bleeder"; others that he was castrated when an infant. Please inform me.

J. R. STARK, M.D., Cincinnati.

ANSWER.—The czarevitch was afflicted with hemophilia. The following excerpt is taken from chapter I of Memories of the Russian Court, by Anna Viroubova (Macmillan Company, Limited, St. Martin's Street, London, 1924, pp. 10-11):

I remember the Empress telling me with what extraordinary ease the child was brought into the world. . . . The Emperor . . . was quite mad with joy. His happiness and the mother's, however, was of short duration, for almost at once they learned that the poor child was afflicted with a dread disease, rather rare except in royal families, where it is only too common. The victims of this malady are known in medicine as haemophiliacs, or bleeders. . . . The whole short life of the Tsarevitch . . . was a succession of agonizing illnesses due to this congenital affliction. . . . His mother . . . dwelt morbidly on the fact that the disease . . . was common in her family.

TREATMENT OF HYPERTENSION WITH ALBUMINURIA

To the Editor:—A pharmacist, aged 33, works every day, and, except for some mental apathy, feels well. He has hypertension (blood pressure, 190 systolic and 120 diastolic). The urine is of low specific gravity; there is a heavy trace of albumin and a few hyaline casts. The condition of the heart apparently is good. The patient is under a low protein, salt-free diet, with alkalis; he has taken nephritin tablets, and Basham's mixture has been tried. Several infected teeth have been removed, yet no favorable progress has been made in reducing the blood pressure or albuminuria. Kindly discuss prognosis and give further suggestions as to treatment in this case.

IRVING I. CROUSE, M.D., Buffalo.

ANSWER.—It might be well to continue the low protein, salt-free diet, but omit the alkalis, the nephritin tablets which were reported on adversely by the Council on Pharmacy and Chemistry (THE JOURNAL, Oct. 5, 1907, p. 1198), and the Basham's mixture. If the urine is alkaline, the tertiary phosphates of calcium and magnesium may be used. No mention is made of the Wassermann test. The change of the intestinal flora from a proteolytic to an aciduric flora by means of large amounts of bacillus acidophilus and lactose has been of distinct value in some cases of essential hypertension, leading to progressive kidney changes. The prognosis in this case will depend on the function of the kidneys, as determined by the results of the renal function tests, and, in addition, on the changes in the patient after the treatment specified has been tried.

POISONING FROM USE OF OXYACETYLENE TORCH ON GALVANIZED IRON

To the Editor:—Can you give me any information relative to acute poisoning from an oxyacetylene torch in contact with galvanized iron as differentiated from the use of nongalvanized iron? I have been having several cases of poisoning in burners on galvanized iron.

FRED E. JONES, M.D., Quincy, Mass.

ANSWER.—It appears from the query that the only variable introduced is galvanized iron, instead of nongalvanized iron. If this assumption is true, the acute poisoning is likely to be "zinc chills." The temperature of an oxyacetylene torch readily raises the temperature to a point at which vapors containing zinc oxide are formed. The occurrence of zinc chills from the use of oxyacetylene torches on galvanized metals is well established. On theoretical grounds, galvanizing metal contains at least traces of lead and minute quantities of arsenic. It is, however, improbable that these metals are the source of the acute poisoning encountered. In fact, these have the same symptoms as brass founders' ague or zinc ague (see Kober and Hayhurst: Industrial Health, p. 467).

If volatilized zinc is responsible for the condition, as is believed, an acute disease on the same day as exposure, and commonly developing after the work period, may be expected to arise. This condition is characterized by profuse chills resembling malarial chills, and associated with great thirst, followed in the course of a few hours by profuse perspiration and deep sleep. On the day following, after a night of zinc chills, the patient presents a marked distaste for food; he is quite weak and may be nauseated. Ordinarily, however, he is able to continue at work, and if exposure is repeated another period of chilling may develop; but without exposure no more chills take place. Continued exposure may gradually lead to a temporary tolerance for the metal fumes, but short periods away from work, such as a vacation or a week-end holiday, may dissipate this tolerance. No chronic form of this disease is known, although prolonged intake of zinc in considerable quantities may produce a chronic state which appears to be unrelated to zinc chills, as an acute disease. The use of alcohol is believed to favor the occurrence of zinc chills.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

CALIFORNIA: Los Angeles, Feb. 4-7, 1929. Sec., Dr. Charles B. Pinkham, 420 State Office Building, Sacramento, Calif.

CONNECTICUT: Basic Science; *prerequisite* to examination for medical license; New Haven, February 9. Address State Board of Healing Arts, 1895 Yale Station, New Haven, Conn.

HAWAII: Honolulu, Jan. 14, 1929. Sec., Dr. James A. Morgan, Room 48, Young Bldg., Honolulu, Hawaii.

ILLINOIS: Chicago, Jan. 22-24, 1929. Supt. of Registration, Dr. V. C. Michels, Springfield, Ill.

KANSAS: Topeka, Feb. 12, 1929. Sec., Dr. A. S. Ross, Board of Medical Registration and Examinations, Sabetha, Kan.

MINNESOTA: Minneapolis, Jan. 15-17, 1929. Sec., Dr. A. E. Comstock, 524 Lowry Bldg. St. Paul, Minn.

NATIONAL BOARD, Parts 1 and 2: All class A medical schools, Feb. 13-15, 1929. Sec., Mr. Everett S. Elwood, 225 South Fifteenth St., Philadelphia, Pa.

NEBRASKA: Omaha, Feb. 13-15, 1929. Dir., Mrs. Clark Perkins, Dept. of Public Welfare, Bureau of Examining Boards, Lincoln, Neb.

NEW YORK: Syracuse, Albany and Buffalo, Jan. 28-31, 1929. Chief, Mr. Herbert J. Hamilton, Department of Education, Educational Building, Albany, N. Y.

SOUTH DAKOTA: Pierre, Jan. 15, 1929. Director, Dr. H. R. Kenaston, Bonesteel, S. D.

VERMONT: Burlington, Feb. 12, 1929. Sec., Dr. W. Scott Nay, Underhill, Vt.

WASHINGTON: Basic Science: Olympia, Jan. 10, 1929. Director, Mr. Charles Maybury, Department of Licenses, Olympia, Wash.

New Jersey June Examination

Dr. Charles B. Kelley, secretary of the New Jersey State Board of Medical Examiners, reports the written examination held at Trenton, June 19-20, 1928. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. Of the 83 candidates, including 32 osteopaths, examined, 73 passed and 10 failed. One hundred and eighteen physicians, including 6 osteopaths, were licensed by reciprocity with other states and 7 by endorsement of credentials. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent
University of Colorado School of Medicine	(1927)	86.0
George Washington University Medical School	(1927)	84.8, 92.3
Georgetown University School of Medicine	(1927)	75, 75.8, 80.4, 85.7
Rush Medical College	(1927)	89.3
University of Illinois College of Medicine	(1928)	80.0
Loyola University School of Medicine	(1928)	85.1
University of Maryland School of Medicine and College of Physicians and Surgeons	(1927)	84.2
Boston University School of Medicine	(1927)	77.0
Tufts College Medical School	(1927)	83.3
University of Minnesota Medical School	(1928)	83.6, 87.4
Columbia University College of Phys. and Surgs	(1927)	86.5
Cornell University Medical College	(1926)	86.1
University of Pennsylvania School of Medicine	(1927)	75, 80.1, 81.5, 82, 85.6, 85.6, 86.3
Jefferson Medical College of Philadelphia	(1909)	78.2, (1927) 76.6, 79.7, 80, 83.3, 88.6
Hahnemann Medical College and Hospital of Philadelphia, Homeopathic	(1927)	78.1, 79.6, 80.8, 83.4, 83.5, 84.8, 85.1, 85.2, 85.7, 87.3, 89.1, 90
University of Toronto Faculty of Medicine	(1928)	83.1
University of Montreal Faculty of Medicine	(1924)	75, (1925) 75
University of Montpelier	(1920)	79.7
University of Palermo	(1905)	*
Osteopaths		75, 75, 75, 75, 75.1, 76, 76.8, 77, 77.5, 78, 78.1, 78.5, 78.8, 79.1, 79.1, 79.4, 79.5, 80.1, 80.1, 80.2, 80.9, 81.6, 83, 83.5, 85, 85.2

FAILED

College	Year Grad.	Per Cent
Columbia University College of Phys. and Surgs	(1893)	59.8
McGill University Faculty of Medicine	(1925)	73.3
University of Naples	(1921)	33.8, (1923)† 68.4
Osteopaths		62.7, 65, 68.6, 70.6, 71.4, 72.3

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
University of Arkansas School of Medicine	(1916)	Arkansas
George Washington University Med. School	(1926), (1927) (1927)	Dist. Colum. New York
Georgetown University School of Medicine	(1924) (2)	Dist. Colum.
Howard University School of Medicine	(1926) (1926) New York, (1927) (3)	Dist. Colum. Dist. Colum.
University of Georgia Medical Department	(1924)	Georgia
Loyola University School of Medicine	(1926)	New York
State University of Iowa College of Medicine	(1927)	Iowa
University of Louisville School of Medicine	(1919) (1926)	Kentucky
University of Maryland School of Medicine and College of Physicians and Surgeons	(1926) (2) (1926), (1927) New York	Maryland
Johns Hopkins University School of Medicine	(1907) (1923) Maryland, (1920) Wisconsin	Penna.
Harvard University Medical School	(1911), (1924)	New York
Boston University School of Medicine	(1927) (2)	New York
Tufts College Medical School	(1916) Mass., (1927)	New York
University of Michigan Medical School	(1924)	Penna.
University of Minnesota Medical School	(1927) (2), (1928)	Minnesota
St. Louis University School of Medicine	(1912) (1927) (2) New York	Missouri
Columbia University College of Phys. and Surgs	(1919), (1925) (2), (1926) (3)	New York
Albany Medical College	(1925)	New York
University of Buffalo School of Medicine	(1924), (1926)	New York
Long Island College Hospital	(1907), (1909), (1916), (1925), (1926), (1927)	New York
New York Homeopathic Medical College and Flower Hospital	(1925), (1926), (1927) (2)	New York
New York Medical College and Hospital for Women	(1915)	New York
Syracuse University Coll. of Med.	(1900), (1925) (2), (1927)	New York
University and Bellevue Hospital Medical College	(1905), (1911), (1925), (1926) (4), (1927) (6)	New York
Eclectic Medical College	(1925) Ohio, (1927)	New York
Cleveland Medical College, Homeopathic	(1895)	New York
Ohio State Univ. College of Med.	(1924) New York, (1926)	Ohio
University of Oregon Medical School	(1926)	New York
University of Pennsylvania School of Med.	(1922), (1925) (1908), (1912), (1926) Pennsylvania	N. Carolina
Jefferson Medical College of Philadelphia	(1915) (1914), (1921), (1924) Pennsylvania	N. Carolina
Woman's Med. College of Penna.	(1904), (1917), (1925)	Penna.
Hahnemann Medical College and Hospital of Philadelphia, Homeopathic	(1912), (1926) Penna., (1925), (1926)	New York
Medico Chirurgical College of Philadelphia	(1909)	Penna.
Temple University School of Medicine	(1915), (1926)	Penna.
Vanderbilt University School of Medicine	(1917)	Tennessee
University of Tennessee College of Medicine	(1926)	Tennessee
Univ. of Vermont Coll. of Med.	(1925) New York, (1926)	Vermont
University of Toronto Faculty of Medicine	(1924) (1924) Pennsylvania	New York
Queen's University Faculty of Medicine	(1927)	New York
McGill University Faculty of Medicine	(1926)	New York
University of Jena	(1914)	New York
University of Marburg	(1924)	Ohio
University of Budapest	(1914)	New York
University of Pecos	(1925)	New York
University of Siena	(1924)	New York
University of Voronezh	(1915)†	Mass.
University of Stamboul	(1917)	New York
Osteopaths	Illinois (1), Maine (1), Missouri (3)	New York (1)

LICENSED BY ENDORSEMENT

College	Year Grad.	Endorsement from
Johns Hopkins University School of Med.	(1923), (1924)	N. B. M. Ex.
Tufts College Medical School	(1925), (1927)	N. B. M. Ex.
Columbia Univ. College of Physicians and Surgeons	(1926)	N. B. M. Ex.
Cornell University Medical College	(1925)	N. B. M. Ex.
University of Pennsylvania School of Medicine	(1925)	N. B. M. Ex.

* No grade given.
† Verification of graduation in process.

Idaho October Examination

Hon. F. E. Lukens, commissioner of law enforcement, Idaho Medical Examining Board, reports the written examination held at Boise, Oct. 2-3, 1928. The examination covered 13 subjects and included 130 questions. An average of 75 per cent was required to pass. There were two candidates examined and passed. Seven physicians were licensed by reciprocity with other states. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent
Northwestern University Medical School	(1904) 75, (1928)	81.0

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
University of Illinois College of Medicine	(1908)	Illinois
Loyola University School of Medicine	(1918)	Utah
State University of Iowa College of Medicine	(1901)	Iowa
University of Michigan Medical School	(1911)	Michigan
St. Louis University School of Medicine	(1927)	Kansas
University of Oregon Medical School	(1924)	Oregon
Jefferson Medical College of Philadelphia	(1926)	Penna.

Utah August Examination

Mr. M. H. Welling, director of the department of registration of Utah, reports the written examination held at Salt Lake City, Aug. 8, 1928. The examination covered 10 subjects. An average of 75 per cent was required to pass. Four candidates were examined and passed. Nine physicians were licensed by reciprocity with other states and one by endorsement of credentials. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent
Georgetown University School of Medicine	(1927)	83.5
Northwestern University Medical School	(1928)	80.7
University of Illinois College of Medicine	(1928)	80.5
Washington University School of Medicine	(1927)	88.0

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
Northwestern Univ. Med. School	(1926) New York, (1927)	Illinois
State Univ. of Iowa College of Medicine	(1926), (1927)	Iowa
University of Louisville School of Medicine	(1925)	Kentucky
Creighton University School of Medicine	(1908), (1927)	Nebraska
University of Cincinnati College of Medicine	(1921)	Indiana
University of Pennsylvania School of Medicine	(1926)	New York

LICENSED BY ENDORSEMENT

College	Year Grad.	Endorsement with
Northwestern University Medical School	(1918)	U. S. Navy

Book Notices

THE PROTAMINES AND HISTONES. By the late Albrecht Kossel, Professor of Physiology in the University of Heidelberg. Translated from the original German manuscript by William Veale Thorpe, M.A., Ph.D., Lecturer in Biochemistry in the University of Birmingham. Cloth. Price, $3.25. Pp. 107. New York: Longmans, Green & Company, 1928.

It is fortunate that Albrecht Kossel, just before his death, completed the manuscript for this important publication. The presentation of the material is done in the masterly, simple and unassuming style one might expect. It is indeed encouraging to find that so great an authority as the author has been so extremely modest and cautious in his statements. Attention is called repeatedly to the need of extending the work in this field and in particular to the need of preparing purer protamines and of developing or applying better methods of analysis.

REPORT ON THE LATE RESULTS OF OPERATION FOR CANCER OF THE BREAST. Being an analysis of 2,006 cases occurring in the practice of the general hospitals of eight county boroughs of England and Wales during the period 1910-1921. By Janet E. Lane-Claypon, M.D., D.Sc. Ministry of Health: Reports on Public Health and Medical Subjects, No. 51. Paper. Price, 3s. net. Pp. 143. London: His Majesty's Stationery Office, 1928.

This pamphlet is a public health report containing a complete statistical and analytic survey of cases of breast cancer that came to operation in the general hospitals of Leeds, Bristol, Birmingham, Leicester, Cardiff, Newcastle and Nottingham. The material represents the work of 113 surgeons and the case records extend from five to fifteen years. There were 1,642 cases of carcinoma verified pathologically and 364 cases believed to be carcinoma but not verified pathologically. Probably the most striking observation in this survey is a net survival rate in early cases of 73.3 per cent at ten years, as contrasted with 13 per cent in which the disease had spread beyond the breast. The pamphlet is unusual in the scope of its information and the amount of material studied and is well worth careful perusal.

A LABORATORY MANUAL OF PHYSIOLOGICAL CHEMISTRY. By D. Wright Wilson, Benjamin Rush Professor of Physiological Chemistry, University of Pennsylvania. Cloth. Price, $3.50. Pp. 272. Baltimore: Williams & Wilkins Company, 1928.

Approximately one third of this volume is devoted to the chemistry of the important cell constituents. An exceedingly brief and elementary treatment of the inorganic constituents and of standard acids and bases is followed by satisfactory instructions on buffer solutions and the colorimetric estimation of p_H. The directions for reactions of carbohydrates, proteins and lipins are also elementary and consequently misleading. The experiments on digestive enzymes are not sufficiently well developed to serve as good examples for students to follow, and an experienced worker cannot help but feel the same lack of accuracy and of necessary detailed instructions in the presentation of the material on colorimetry and the usual chemical tests of the urine and the blood. The chemistry of the cell nucleus is treated in more detail than usual, as one might expect in view of the author's former association with Prof. Walter Jones. The book is well bound but is not indexed.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Herausgegeben von W. Kolle, R. Kraus und P. Uhlenhuth. Lieferung 23. Band III. Experimentelle specifische Diagnostik mittels Agglutination, Baktericidie (Lyse) und Komplementbindung. Von Prof. Dr. H. Sachs. Morphologie und Serologie des Normalblutes der Laboratoriumstiere. Von Dr. E. Jacobsthal und Dr. A. Schuback. Die biologische Eiweissdifferenzierung mittels der Präcipitation mit besonderer Berücksichtigung der Technik. Von Prof. Dr. P. Uhlenhuth und Prof. Dr. W. Seiffert. Die heterogenetischen Antigene, besonders die sog. Forssman-Antigene und ihre Antikörper. Von Prof. Dr. J. Forssman. Bakteriotherapie. Von Prof. Dr. C. Prausnitz. Third edition. Paper. Price, 27 marks. Pp. 193-548, with illustrations. Jena: Gustav Fischer, 1928.

The application of various bacteriologic and serologic methods to the specific diagnosis of disease is beautifully presented by Sachs. His chapter runs the gamut of the important procedures that are available. And because there is a judicious balance between method and theory of method, one is tempted to declare his review almost unique in the literature on the infectious diseases. His bibliography is sufficiently extensive to orient any one in the theoretical developments of recent years. No one using the methods of agglutination, complement fixation and bacteriolysis would remain merely a technician if he read this important contribution. The paper by Jacobsthal and Schuback includes in a brief form a convenient summary on the formed elements in the blood of the guinea-pig, rabbit, sheep, goat, dog, cow, horse, cat, pig, mouse, rat, chicken, pigeon and frog. In addition, it contains summaries on the serologic (lytic and agglutinative) properties of the serums and corpuscles. The chapter by Uhlenhuth and Seiffert presents a bibliographic review on specific and nonspecific precipitation reactions and their uses in diagnostic and medicolegal tests. These have also included more detailed directions on technic than is usually given in papers of this kind. This chapter is largely the chapter of the monographic series on the technic of injecting and bleeding animals. Forssman has himself prepared the review on the so-called Forssman antigens and antibodies and their rôles in specific and nonspecific serum reactions and anaphylaxis. Prausnitz has prepared a practical discussion on specific bacteriotherapy—the preparation of vaccines, their standardization, the election of the site of injection, dosage and the interval between injections. There is also a brief summary of nonspecific treatment with bacteria or their products.

METHODS AND PROBLEMS OF MEDICAL EDUCATION. (Tenth Series.) Paper. Gratis. Pp. 343, with illustrations. New York: Rockefeller Foundation, 1928.

This deals mainly with the teaching of the subjects of hygiene and public health, pathology, pharmacology and physiology, with detailed descriptions of the medical school of the University of Manitoba, Canada, the medical school in Soerabaja, Java, and King Edward VII College of Medicine, Singapore, and four articles dealing with the medical library. There are thirty-three articles by authors in the field of medicine who are professors in the leading universities of the United States and other countries. The reports are illustrated by building and floor plans of various clinics, hospitals and medical colleges, with other illustrations showing their equipment. From this report one can obtain an excellent comparative idea of the various universities represented, and it should be of much value to officers of medical schools in which the erection of new buildings is contemplated. The articles dealing with the medical library are especially comprehensive in their description of arrangement, use and equipment.

MEDIZINISCHE PRAXIS: Sammlung für ärztliche Fortbildung. Herausgegeben von Prof. Dr. L. R. Grote, Leitender Arzt von Dr. Lahmanns Sanatorium Dresden-Weisser Hirsch, Prof. Dr. A. Fromme, Leitender Arzt der chirurgischen Abteilung des Stadtkrankenhauses Friedrichstadt Dresden, und Prof. Dr. K. Warnekros, Direktor der staatlichen Frauenklinik zu Dresden. Band IV: Die Erkrankungen der Gallenwege und ihre chirurgische Behandlung. Von Prof. Dr. Werner Körte, Geh. Sanitätsrat in Berlin. Paper. Price, 10 marks. Pp. 183, with 26 illustrations. Dresden: Theodor Steinkopff, 1928.

In the last four years, experimental and clinical research has developed three new phases of bile tract surgery: cholecystography, an understanding of gallbladder function, and early diagnosis of cholecystic lesions. This new work is essentially of the United States. One finds relatively little reflection on the bile tracts in this monograph, which essays to cover the entire subject of gallbladder surgery, There are chapters on anatomy, physiology, chemical formation of stones, bacteriology, colic, jaundice, complications, and medical and surgical management. There is little that is not contained in the older works on the bile tracts, and the brevity of the text and the scarcity of illustrations make the book of little use as a reference volume.

DISEASES OF THE EAR, NOSE AND THROAT, MEDICAL AND SURGICAL. By Wendell Christopher Phillips, M.D., Surgeon to the Manhattan Eye, Ear and Throat Hospital. Seventh edition. Cloth. Price, $9 net. Pp. 922, with 615 illustrations. Philadelphia: F. A. Davis Company, 1928.

This edition of Phillips' popular work contains a number of new points especially in the chapters on the tests for hearing and the chapter on the hearing problem, the development of the subject of infantile mastoiditis and the action of actinic radiation on the body surfaces, as well as in the modification of a number of other topics. In the chapter on the functional testing of hearing there is a typographic error that occurs in a great many of the textbooks containing special articles on the subject: the name Rinne is given with an accent over the e, whereas it is a German name and should appear without any accent. On the subject of malingering, a number of tests are

presented, but the Stenger test, which is one of the best ever devised, is not mentioned. With the exception of a few minor points this is a most complete, well arranged and valuable textbook, which has been brought down to date in every sense of the word. There are many fine illustrations and the text is so arranged that it is easy to find and to follow any particular subject. The work, on the whole, is excellent; it should prove valuable to every student of otolaryngology, and it certainly deserves to retain and possibly to increase the popularity that the former editions have enjoyed.

SINUS THROMBOPHLEBITIS. Inflammatory Diseases of the Venous Sinuses of the Dura Mater. By Alfred Braun, M.D., Attending Otolaryngologist, Hospital for Joint Diseases, New York. Cloth. Price, $12 net. Pp. 269, with 111 illustrations. New York: Paul B. Hoeber, Inc., 1928.

Involvement of the lateral sinus is a rather frequent and distressing complication of mastoiditis. While the subject is treated in a rather brief manner in most textbooks on otology, this monograph by Dr. Braun covers the subject in great detail. The illustrations were drawn by the author, some of them being original and some modified from other illustrations. Beginning with the development of blood vessels of the head, the anatomy of the various venous channels of the skull is well described. The etiology and pathology of infection especially of the lateral sinus, its symptoms and diagnosis are thoroughly discussed. The various types of treatment are well presented, and the bibliography is complete. The reading of this book is a joy in that the material is well presented, it is excellently illustrated, and the various phases of the important diseases of the lateral and cavernous sinuses, such as phlebitis and thrombosis, are systematically presented for the guidance of otologic surgeons. The monograph is a valuable addition to the literature and should prove of great benefit to otologists in aiding them in the treatment of these serious complications which occur in so many cases of acute otitis media, which have so many serious sequelae and which, unfortunately, are so often undiagnosed simply because the typical clinical picture is not present in every case. Dr. Braun deserves great credit for the clear and interesting manner in which he has treated every phase of the subject, presenting his and other men's views in this compact yet comprehensive treatise.

LA TUBERCULOSE PULMONAIRE VUE AUX RAYONS X. Par Dr. Jacques Stephani. Paper. Price, 75 francs. Pp. 288, with 161 illustrations. Paris: Payot, 1928.

This book is merely a good general review of the radiologic diagnosis of pulmonary tuberculosis. Nothing new has been added. The classification of various stages in the progress of the disease as well as the radiologic diagnostic signs are those in common use. The illustrations are excellent. One commendable feature is the concise reports under each illustration. There are nearly 150 of these. The author's technic varies considerably from that in general use in this country. He believes the gas tube superior to the Coolidge tube. Most of his exposures were made with the patient lying down, a milliamperage of from 40 to 60, a distance of 1 to 1.25 meters and a time factor of one-twenty-fifth to one-fiftieth second.

STRÜMPELL-SEYFARTH LEHRBUCH DER SPEZIELLEN PATHOLOGIE UND THERAPIE DER INNEREN KRANKHEITEN. Für Studierende und Ärzte. Band II. Von Dr. Med. et Phil. Carly Seyfarth, a. o. Professor für innere Medizin an der Universität Leipzig. Twenty-seventh edition. Paper. Price, 25 marks. Pp. 989, with 218 illustrations. Leipzig: F. C. W. Vogel, 1928.

Other recent reviews of this esteemed work (THE JOURNAL, Oct. 15, 1927; Feb. 4, Sept. 1, 1928), together with comments with regard to the second volume for the 1928 revision, all make a single narrative. It is a tale of improvement at a regular pace, of serious endeavor to maintain compactness in a work already grown somewhat beyond the average student's manual and to include some consideration of modern accepted advances of knowledge in internal medicine. Important additions have been made by the judicious use of smaller type here and there and portions of pages heretofore bare at the ends of chapters. Consequently the increase of only nine pages in the total of 1,861 pages in the two volumes of the last edition is but a feeble indication of its elaboration. In the revised second volume there are ten more illustrations, some of them in colors; new illustrations of urinary casts, and improvement of the colored full page plates illustrating cells of the blood. Two illustrations formerly black and white are now in colors. Two of the new illustrations depict the changes of the skin in pellagra. Another illustrating the innervation of the internal organs occupies an entire page; it is partly in color and belongs to new chapters on the vegetative nervous system, its neuroses, and diseases of the cervical sympathetic system. Other new chapters deal with acquired hemolytic anemia, sickle-cell anemia, and the joint diseases caused by gonorrhea and syphilis. The particulars of symptoms, diagnosis and treatment of constitutional hemolytic anemia, perhaps more widely known as familial hemolytic jaundice, are elaborated; also the treatment of simple anemia of children. There is an excellent but brief description of erythema nodosum as a symptom of acute articular rheumatism; in previous editions it was barely mentioned. An entire page of smaller print is devoted to the dietetic treatment of pernicious anemia. Especially significant is the omission in this volume of a statement in the previous edition that the prognosis of essential, or, as it has often been called, cryptogenetic pernicious anemia is invariably unfavorable. It is by such unremitting attention to details and by yearly new editions that this great work retains its dominating position as a guide for practicing physicians and a reference work for undergraduates disposed to thorough study.

GROWTH AND DEVELOPMENT WITH SPECIAL REFERENCE TO DOMESTIC ANIMALS. XI: Further Investigations on Surface Area with Special Reference to Its Significance in Energy Metabolism. University of Missouri College of Agriculture. Agricultural Experiment Station Research Bulletin 115. Paper. Pp. 60, with illustrations. Columbia, Mo., 1928.

GROWTH AND DEVELOPMENT WITH SPECIAL REFERENCE TO DOMESTIC ANIMALS. XII: Additional Illustrations of the Influence of Food Supply on the Velocity Constant of Growth and on the Shape of the Growth Curve. University of Missouri College of Agriculture. Agricultural Experiment Station Research Bulletin 116. Paper. Pp. 16, with 11 illustrations. Columbia, Mo., 1928.

These bulletins belong to a series of reports of a growth committee, of which Samuel Brody, A.M., is chairman. They contain detailed mathematical treatments of numerous data and for this reason will probably not be readily appreciated by the average reader. For the specialist trained in higher mathematics they should prove extremely valuable. Paper XI, dealing with the surface area problem, contains a critical analysis of various surface area formulas reported in the literature. As a result of such analysis "it is concluded, on mathematical and biological grounds, that, while it may be more convenient and perhaps more enlightening to relate heat production to surface area, it is simpler to relate heat production directly to body size raised to some power by a method explained in detail in the text." In several bulletins published previously, comparisons were made between the age curves of growth of animals under various degrees of normality of food supply. In paper XII further comparisons are made, utilizing chiefly the data of Osborne and Mendel recently obtained showing unusually rapid growth of rats on improved rations. It appears that the same exponential equation previously developed by Brody may be used to represent the age curves of growth of these more rapidly growing animals, the only difference being in the velocity constant K, "which is a numerical value of the speed of approach to the mature weight." One practical suggestion arising from this work is that "body weight rather than age be used as a criterion for first breeding of farm animals and that dairy heifers be first bred when reaching two thirds of the expected mature weight." In the bulletins will be found numerous valuable charts of special interest to students of growth and development.

CHIRURGISCHE OPERATIONSLEHRE. Ein Lehrbuch für Studierende und Ärzte. Von Professor Dr. O. Kleinschmidt, Direktor der chirurgischen Abteilung des städtischen Krankenhauses in Wiesbaden. Cloth. Price, 57 marks. Pp. 1269, with 705 illustrations. Berlin: Julius Springer, 1927.

This textbook on operative surgery, for students and practitioners, differs somewhat from other works on operative surgery in that all the larger divisions begin with a collective historical sketch of the field concerned. In case of the various regional operations, the section dealing with operative technic is preceded by a brief statement of diagnosis, the indications for operation, and choice of anesthesia, and is followed by points

on the postoperative care in the particular operation. The author's original plan was to bring forth a new edition of von Bergman and Roch's "Operative Course on the Cadaver" but he has produced instead an entirely new book, one in which he presents essentially the operative methods developed and valuable lessons learned from many years of experience by Payr and his school, of which Kleinschmidt was for years a member. The various operative procedures are rather briefly though adequately described, and excellently illustrated, the various photographs, drawings and diagrams being exceptionally fine. The volume is greatly enhanced by an unusually complete index. An important feature of the work, and one that deserves great praise, is the excellent bibliography. This covers fifty pages and is most practical, each part not only being set off by the title of the subject matter referred to but also being marked, at the left, with a number in boldface type showing the page to which the references belong. As Payr is today one of the leading surgeons in Germany, and a surgeon of great experience and imagination, yet most practical in every way, this presentation of the methods developed at his clinic will be of interest to all American surgeons, as well as being a textbook for students and practitioners. Kleinschmidt has contributed a valuable book.

LUES CONGENITA TARDA. Von Dr. med. Walther Krantz, Privatdozent. Oberarzt an der Hautklinik Lindenburg der Universität Köln. Paper. Price, 4 marks. Pp. 60, with 46 illustrations. Berlin: Urban & Schwarzenberg, 1928.

This is a discussion of the principal stigmas of late congenital syphilis and is based on the original observations of Hutchinson and Fournier in this field. About one third of the brochure is devoted to a consideration of the dental changes. An analysis of cases occurring in the author's own experience and a bibliography would have added much to the value of the book.

A TEXT-BOOK OF PHARMACOLOGY AND THERAPEUTICS. By Hugh Alister McGuigan, Ph.D., M.D., Professor of Pharmacology and Therapeutics, University of Illinois College of Medicine. Cloth. Price, $6 net. Pp. 660, with 43 illustrations. Philadelphia: W. B. Saunders Company, 1928.

This textbook on pharmacodynamics, done in the modern manner, is more theoretical perhaps than necessary and not as practical as may be desirable, as is the case with most of the books of the Schmiedeberg school. The author makes a greater effort at being "practical" than some of the other writers, and there is much in the book that is commendable. Hence, one notices with regret numerous defects in diction, punctuation and spelling that could hardly be ascribed to anything else than carelessness; e. g., to quote only a few of many: glycerine (p. 285) instead of glycerin, sodii bromidii (p. 138), liquor creosolis compositus (pp. 225, 335 and index) instead of liquor cresolis compositus, and benzaconiine (p. 496) for benzaconine. Such errors might merely be charged to errors in proofreading; but even this is almost inexusable in a book a part of whose mission it is to teach these technical terms. Carelessness, for it is surely not lack of information, also shows itself in classifying urea among the expectorants, or conium and gelsemium among the convulsive poisons; in giving a model prescription for paraldehyde containing so great an excess of paraldehyde that it separates into two layers on standing; in apparently suggesting that "hive syrup" was named for its use in urticaria when it really was named thus because of its use in laryngitis, hives being an old-fashioned term for croup, as well as in giving "agurin" as a synonym for soluble theophylline when it is a theobromine combination.

A HANDBOOK ON VENEREAL DISEASES FOR NURSES AND OTHERS ENGAGED IN THE ROUTINE TREATMENT OF THESE DISEASES. By Turner Warwick, F.R.C.S., Assistant Surgeon and Medical Officer in Charge of Male Gonorrhœa Department, Middlesex Hospital. Cloth. Price, 6/- net. Pp. 221, with illustrations. London: Faber & Gwyer, Ltd., 1928.

This booklet differs somewhat from other short compendiums by the emphasizing of the necessary instruction of nurses and by the accentuation of the importance of public attention to the prophylaxis of venereal diseases. In all other respects it follows the usual lines.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

DIE TECHNIK DER EINGRIFFE AM GALLENSYSTEM NACH DEN ERFAHRUNGEN DER KLINIK EISELSBERG UND DER CHIRUG. ABT. DES WILHELMINEN-SPITALS. Von Privadozent Dr. Peter Walzel, Vorstand der chirurgischen Abteilung des Wilhelminen-Spitals in Wien. Mit einem topographisch-anatomischen Teil. Von Dr. Oskar Schumacher, Assistent der I. anatomischen Lehrkanzel der Universität Wien. Paper. Price, 36 marks. Pp. 240, with 108 illustrations. Vienna: Julius Springer, 1928.

Surgery of the gallbladder.

LECTURES ON PLANT PATHOLOGY AND PHYSIOLOGY IN RELATION TO MAN. A Series of Lectures Given at the Mayo Foundation and the Universities of Minnesota, Iowa, Wisconsin, the Des Moines Academy of Medicine, Iowa, and Iowa State College, 1926-1927. Cloth. Price, $2.50 net. Pp. 207, with 16 illustrations. Philadelphia: W. B. Saunders Company, 1928.

A symposium planned to keep the physician abreast of advances in a correlated field.

LEHRBUCH DER TOXIKOLOGIE FÜR STUDIUM UND PRAXIS. Von Ferdinand Flury, Professor der Pharmakologie an der Universität Würzburg, und Heinrich Zangger, Professor der gerichtl. Medizin an der Universität Zürich. Paper. Price, 29 marks. Pp. 500, with 9 illustrations. Berlin: Julius Springer, 1928.

Large reference work on medicolegal toxicology.

PATHOLOGISCH-ANATOMISCHE VERÄNDERUNGEN ÜBER DIE CONGENITALE SYPHILIS BEI DEM FOETUS UND DEM NEUGEBORENEN KIND. Von Oluf Thomsen. Paper. Pp. 31, with illustrations. Copenhagen: Levin & Munksgaard, 1928.

Beautifully illustrated monograph on pathologic changes due to syphilis in the fetus.

EUROPEAN CLINICS. Editorial Staff of European Clinics, 1927. Editor-in-Chief, Dr. William Lintz, Senior Attending Physician of Unity Hospital. Cloth. Price, $5. Pp. 347, with illustrations. Philadelphia: J. B. Lippincott Company, 1928.

Report of what was given to the doctors on Dr. Peck's last tour.

FORTSCHRITTE DER SEXUALWISSENSCHAFT UND PSYCHANALYSE. Von Dr. Wilhelm Stekel. Redigiert von Dr. Anton Missriegler und Emil Gutheil. III Band. Paper. Price, 12 marks. Pp. 195, with 2 illustrations. Leipzig: Franz Deuticke, 1928.

Collection of essays by the pupils of Stekel.

THE DOCTOR LOOKS AT MARRIAGE AND MEDICINE. By Joseph Collins. Cloth. Price, $3 net. Pp. 313. Garden City, N. Y.: Doubleday, Doran & Company, Inc., 1928.

A collection of the witty and distinctly personal essays of the doctor who is looking at everything.

THE HISTORY OF BIOLOGY: A SURVEY. By Erik Nordenskiöld. Translated from the Swedish by Leonard Bucknall Eyre. Cloth. Price, $6. Pp. 646, with 32 portraits. New York: Alfred A. Knopf, 1928.

Handsome volume outlining the growth of the science of man.

LES ARTHRITES GONOCOCCIQUES. Par Henri Mondor, professeur agrégé de la Faculté de médecine de Paris. Paper. Price, 70 francs. Pp. 527, with 121 illustrations. Paris: Masson & Cie, 1928.

Brief French monograph on gonococcal arthritis.

LEYES, DECRETOS Y REGLAMENTOS DE CARACTER SANITARIO, (1923-1928). Paper. Pp. 81. San Jose de Costa Rica: Secretaria de Salubridad Publica y Proteccion Social, 1928.

Outlines of Costa Rican sanitation and hygiene.

SPASMOPHILIA. By Edward C. Wrightsman, M.D. Cloth. Price, $2. Pp. 155, with 23 illustrations. Boston: Richard G. Badger, 1928.

Monographic consideration, poorly printed, of common disorder of infancy.

LECTURES ON CONDITIONED REFLEXES. Twenty-Five Years of Objective Study of the Higher Nervous Activity (Behaviour) of Animals. By Ivan Petrovitch Pavlov, M.D., Director of the Physiological Laboratories, Institute of Experimental Medicine and Academy of Sciences. Translated from the Russian by W. Horsley Gantt, M.D., B.Sc., Co-worker in Prof. Pavlov's Laboratory, Institute of Experimental Medicine, 1925-1928. With the collaboration of G. Volborth, M.D., and an introduction by Walter B. Cannon, George Higginson Professor of Physiology, Harvard University. Cloth. Price, $6.50. Pp. 414, with 9 illustrations. New York: International Publishers, 1928.

AUSGEWÄHLTE SCHRIFTEN ZUR TUBERKULOSEPATHOLOGIE. Von K. E. Ranke, Weiland Professor an der Universität München. Herausgegeben und eingeleitet von W. und M. Pagel. Paper. Price, 20 marks. Pp. 236, with 25 illustrations. Berlin: Julius Springer, 1928.

THE PRESSURE PULSE IN THE CARDIOVASCULAR SYSTEM. By Carl J. Wiggers, M.D., Professor of Physiology in the School of Medicine of Western Reserve University. Cloth. Price, $5. Pp. 200, with 48 illustrations. New York: Longmans, Green & Company, 1928.

COMMITTEE ON PUBLIC HEALTH RELATIONS OF THE NEW YORK ACADEMY OF MEDICINE, REPORT OF ACTIVITIES FOR THE YEAR 1927. Paper. Pp. 31. New York: New York Academy of Medicine, 1928.

OVERCOMING CLEFT PALATE SPEECH. Help for Parents and Trainers. By Edna Hill Young of the Hill-Young School of Speech, Minneapolis. Cloth. Price, $2. Pp. 51. Minneapolis: Hill-Young School, 1928.

LOSING LIBERTY JUDICIALLY. Prohibitory and Kindred Laws Examined. By Thomas James Norton, of the Chicago Bar. Cloth. Price, $2.50. Pp. 252. New York: Macmillan Company, 1928.

NIEUWE GEZICHTSPUNTEN INZAKE TUBERCULOSE—BESTRIJDING. Door arts H. Toxopeus, Uitsluitend voor Engborstige Patienten. Cloth. Price, 2.50 guilders. Pp. 108. Groningen: P. Noordhoff, 1928.

PRIMER CENSO DE LA LEPRA. Paper. Pp. 503. Mexico: Departamento de Salubridad Publica, 1927.

Medicolegal

Agent's Knowledge Imputable to Insurer

(American Nat. Ins. Co. v. Bailey (Texas), 3 S. W. (2d) 539)

The appellant in this case issued a life insurance policy to the husband of the appellee, May 18, 1925. The husband died the following October and the appellee secured judgment on the policy in the district court, from which the insurance company appealed to the court of civil appeals of Texas. The appellant contended that the insured was not in good health at the time of the delivery of the policy, as required by a clause in the policy, and that therefore there was no liability under it. The facts in the case developed that the insured was operated on in July, 1924, for cirrhosis of the liver and that he was suffering from ascites at that time. The operation was a successful one. The appellee testified that her husband, on May 18, 1925, had the physical appearance of a man in good health, that he slept well at night, that he ate heartily, that his weight was about the same as usual, and that during the six months prior to the issuing of the policy he had performed manual labor. Three physicians testified that all of these were indications of good health. The court of appeals held that this was sufficient evidence to warrant the jury in finding that the insured was in good health at the time the policy was issued. Even had the insured not been in good health, the court continued, that fact would not have voided the policy. The evidence showed that the agent of the appellant knew about the operation that the insured had undergone and this knowledge was to be imputed to the appellant, the court said, estopping it from making the defense of ill health at the time the policy was issued. The court of appeals affirmed the judgment of the district court.

Assault as Exciting Latent Tuberculosis

(Kirschbaum v. Lowrey (Minn.), 218 N. W. 461)

The plaintiff claimed that prior to an assault which she alleged the defendant committed on her she had latent tuberculosis and that this latent condition became active because of the nervous excitement incident to the alleged assault. She recovered damages in the district court, which overruled the defendant's motion for a new trial. The defendant appealed to the supreme court of Minnesota.

The plaintiff claimed that she had been twice assaulted by the defendant, on November 1 and on January 23. The second assault, the facts showed, was an invited one, the result of prearranged plans made by the plaintiff and her husband. February 2, the plaintiff consulted Dr. D., who found her hysterical. He attended her on several subsequent days, and on April 17 found a temperature of 99.6 F. May 7, he concluded that she had pulmonary tuberculosis. He testified that, according to the teaching of the best physicians in regard to tuberculosis, the plaintiff had a latent tuberculous condition at the time of the injury, apparently referring to the second assault. Dr. D. was asked the following question:

> Would an experience such as the plaintiff had in this case, subjected to an assault and being thrown into a hysterical condition and suffering an injury to the coccyx, would that tend to lower the resistant power so as to cause the tuberculosis condition to flare up? . . . In your opinion would that cause this condition?

Over the objection of the defendant he answered, "Yes, it could." The supreme court held that it was error, for want of foundation, to permit the physician to give an opinion as to the eventual effect of the assault on the plaintiff without showing that he heard the testimony describing the assault, or without stating the facts to characterize the assault. There was nothing in the record to show the physician's conception of the character of the assault or of its immediate effect.

The trial court instructed the jury that if the defendant assaulted the plaintiff she was entitled to recover such measure of damages as would fairly and justly compensate her for the consequences of such assault, and that if such assault aggravated and caused to flare up again a latent tuberculosis that fact might be taken into consideration by the jury in determining "the amount of any additional damages." This instruction was erroneous, the supreme court held, so far as it told the jury that it could assess "additional damages" over and above the usual compensatory damages.

The supreme court said that the plaintiff, having invited the second assault, which from the evidence did not exceed the bounds of the invitation, could not make it a basis for the recovery of damages. The plaintiff's right to recover, the court said, should therefore have been limited to the first attack. It was the opinion of the supreme court that the question whether the plaintiff was suffering with a latent tuberculous condition, which was caused to flare up by reason of the first assault on her, rested in conjecture and speculation and should not therefore have been submitted by the trial court to the jury. The court said:

> It was subsequent to the so-called second assault that she required medical assistance, when it was found necessary to administer to her hysterical condition. In the eighty days following the first assault, she did not require a doctor . . . How the consequences of her own recent conduct could be eliminated or separated to permit a finding that the first assault was the proximate cause of the "flare-up" is not made to appear. Whether this is possible we do not know. So far no effort has been made to show this.

The decision of the district court was reversed for the errors stated.

Taxation of Charitable Hospital

Baptist Hospital v. City of Nashville (Tenn.), 3 S. W. (2d) 1059)

The question involved in this case was the right of the city to tax the property of the Baptist Hospital. It was conceded that the city had no such right if the property was used exclusively for charitable purposes. The facts showed that the hospital charged fees for hospital services rendered to about 85 or 90 per cent of all patients, the remaining 10 or 15 per cent receiving free services; that any reputable white physician could use the facilities of the hospital in treating his private patients on the payment by such patients of the fees charged by the hospital; that only white patients are admitted to the hospital; that patients suffering from contagious diseases are not admitted, and that the hospital had operated at a loss until the several months preceding the suit, during which a profit was made. The lower court decided that the hospital was exempt from taxation and the city appealed to the supreme court of Tennessee.

The Baptist Hospital was a corporation created under chapter 97, acts of 1923. Its charter provided in part:

> The purpose of the organization of this corporation is for the general welfare, and not for profit, and any income derived therefrom shall not be paid out on dividends to any person or corporation, but shall be used for general welfare purposes, and only for the purposes of such institution organized hereunder.

The supreme court pointed out that the test of whether an enterprise is charitable is whether it exists to carry out a purpose recognized in law as charitable, or whether it is maintained for gain, profit or private advantage. The nature of a corporation, the court continued, as well as its purposes and objects, must be determined from its charter or articles of

association, and cannot be shown by extrinsic evidence. If an association may otherwise be classed as a charitable one, the fact that it receives pay from some of its students, inmates, patients or other persons to whom it extends benefits detracts nothing from its character as a purely charitable institution. In referring further to the question of pay patients, the court said:

> It can hardly be urged at this period in our development that such an institution is not a charity. Hundreds of religious and benevolent organizations conduct drives, solicit donations, and in other ways raise large sums of money for the express purpose of building, equipping and operating hospitals. The donors make their contributions knowing that they will receive no pecuniary benefits in return. Such gifts cannot be otherwise denominated than charities; the clear intention of the donors being to provide for those unfortunates who are sick, diseased, and disabled and without means to procure necessary medical care and treatment. Those who are able should pay, for, by doing so, it enables the institution to care for more persons who are unable to pay.

The decree of the lower court denying the right of the city to tax the hospital was affirmed.

Traumatic Pneumonia Compensable

(Employers' Liability Assur. Corp. et al. v. Treadwell (Ga.), 142 S. E. 182)

This was a claim against the employer and the insurance carrier for compensation under the workmen's compensation act. An award of compensation by the commissioner to the claimant was affirmed by the superior court. The insurance carrier and employer appealed to the court of appeals of Georgia. The evidence authorized the inference, this court said, that the claimant's husband died from traumatic pneumonia, which resulted directly from an injury received in the chest when handling logs in the discharge of his duty. The court of appeals, therefore, held that the injury to the claimant's husband arose out of and in the course of his employment; that the commissioner was authorized under the law and the evidence in awarding compensation and that the superior court did not err in affirming the award.

Preexisting Injury as Affecting Compensation

(American Mut. Liability Ins. Co. et al. v. Brock, (Ga.), 142 S. E. 101)

This was a proceeding instituted under the workmen's compensation act of Georgia. The claimant received an injury, in the course of his employment, to the knee of a leg which had been amputated 3 inches below the knee when he was 8 years old. The industrial commission found that this prior amputation amounted to an incapacity of between 85 and 86 per cent, and that the degree of incapacity resulting from the recent injury to the knee was 50 per cent of the remaining capacity. The claimant was awarded compensation on that basis and appealed to the superior court. This court, in setting aside the award of the industrial commission, held that the claimant should have been awarded compensation just as if he had two legs. The court of appeals affirmed the decision of the superior court, and the employer and the insurance company appealed to the supreme court of Georgia.

The workmen's compensation act of Georgia, Section 34, provides as follows:

> If an employee who suffers an injury in his employment has a permanent disability or has sustained a permanent injury . . . suffered elsewhere, he shall be entitled to compensation only for the degree of incapacity which would have resulted from the latter accident if the early disability or injury had not existed.

In construing this section, the supreme court stated that it commanded the industrial commission to award compensation to one previously injured only for the degree of incapacity which as a matter of fact did result from the later accident, so as to exclude the effects of the first accident or injury, and so as to allow compensation only for the latter accident. To hold, the court said, that the claimant may be treated as if he were a two-legged man in determining the value of the loss of use of a portion of a leg would be to leave out of consideration and completely obliterate the fact that he had been somewhat injured in a previous accident for which the present employer was not in any way responsible. The court concluded, therefore, that the court of appeals erred in affirming the judgment of the superior court reversing the finding of the industrial commission. The judgment of the court of appeals was therefore reversed.

Dying Declarations as Evidence in Abortion Case

(Gaskins v. State (Ohio), 160 N. E. 500)

Gaskins, a physician, was convicted in the trial court of having performed a criminal abortion on a named woman which resulted in her death. He appealed to the court of appeals of Ohio, Hamilton County, claiming among other things that the trial court erred in permitting a witness to testify that the deceased had twice declared that she was going to die, that she did not wish to deceive the witness, and that Dr. Gaskins had performed the abortion. The court of appeals, in affirming the judgment of conviction, held that the testimony objected to was admissible as a dying declaration.

Duty of Physician to Diagnose and Report Smallpox

(Jones v. Stanko (Ohio), 160 N. E. 456)

The appellee, as administratrix, brought this action to recover damages for the death of her husband, which she alleged was caused by the negligence of the appellant, a physician. In the trial court judgment was given for the physician. This judgment was reversed by the court of appeals and the appellant brought error to the supreme court of Ohio.

The appellant treated a patient who, the evidence tended to show, had black smallpox, from which he died. The husband of the appellee, a neighbor of the patient, was assured by the appellant that the patient was not suffering from a contagious disease and by reason of this assurance the husband ministered to the needs of the patient. The record does not so state, but it may be inferred, that the husband contracted the disease and death resulted. The appellant failed to advise any one that his patient was suffering from a contagious disease and failed to notify the health authorities, as required by law. In the trial court the appellee requested that the jury be charged that if it believed that the fact that the patient was suffering from smallpox would have been known to a physician "possessing the requisite qualifications" and applying his skill and judgment with ordinary care and diligence to the diagnosis of the disease, it was the duty of the appellant to report the disease to health authorities, and if he failed in that duty and such failure was a proximate cause of the death of the appellee's husband, the verdict must be for the appellee. The instruction was refused by the trial court. The appellant contended that the jury should have been instructed that he was required to have only the ordinary skill possessed by general practitioners in medicine in the locality of his home, and that he was not required to possess the "requisite qualifications" to diagnose a case of black smallpox. The requested instruction did not, the supreme court said, require that the appellant possess expert knowledge in diagnosing but that he possess the knowledge and skill possessed by physicians in general practice. A physician who engages in the general practice of medicine, the supreme court continued, is required by law to be one educated so as to know when he is dealing with a dangerously contagious disease, and if it were a defense for such a physician who had failed to discover and give notice of the presence of such a disease to plead that he had not theretofore treated a disease of that kind or observed its symptoms, the escape from the provisions of the statute would be marvelously easy. Aside from the feature of the instruction describing the necessary qualifications to be possessed by a physician, it was not seriously contended that the instruction was erroneous. The supreme court held, therefore, that the failure of the trial court to give the instruction, and two others containing similar phraseology, was prejudicial to the appellee, and the judgment of the court of appeals reversing the judgment of the trial court was affirmed.

Society Proceedings

COMING MEETINGS

Pacific Coast Surgical Association, Catalina Island, California, February 22-23. Dr. E. L. Gilcreest, Fitzhugh Building, Union Square, San Francisco, Secretary.

Tri-States Medical Association of Mississippi, Arkansas and Tennessee, Memphis, February 6-8. Dr. A. F. Cooper, Bank of Commerce Bldg., Memphis, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Obstetrics and Gynecology, St. Louis

16: 611-764 (Nov.) 1928

Teaching of Obstetrics. P. Findley, Omaha.—p. 611.
*Treatment of Cervicitis. F. C. Holden, New York.—p. 624.
*Premarital Examination as Routine Preventive Gynecology. R. L. Dickinson, New York.—p. 631.
Surgical Treatment of Sterility: Salpingostomy. W. Kerwin, St. Louis. —p. 641.
*Immediate and Remote Results in 212 Cases of Prolapse of Uterus. J. L. Baer and R. A. Reis, Chicago.—p. 646.
*Clinical Results Obtained with Oxytocin and Vasopressin. G. G. Ward, E. C. Lyon, Jr., and G. G. Bemis, New York.—p. 655.
Certain Gynecologic and Obstetric Conditions as Exhibited in Colored and White Races. C. J. Miller, New Orleans.—p. 662.
*Relaxation of Anterior Vaginal Wall: End-Results. C. C. Norris and R. A. Kimbrough, Jr., Philadelphia.—p. 675.
Fistula of Uterus. J. C. Masson and H. E. Simon, Rochester, Minn. —p. 682.
Metabolism of Galactose: IV. Effect on Tolerance of Level of Ovarian Activity. A. W. Rowe and M. McGuinness, Boston.—p. 687.
Case of Abdominal Pregnancy Removed per Vaginam. W. A. Scott, Toronto.—p. 699.
*Tuberculous Salpingitis. G. V. S. Smith, Boston.—p. 701.
Office Use of Electric Cautery in Gynecology. T. W. Adams, Portland, Ore.—p. 706.

Treatment of Cervicitis.—Summarizing the treatment of cervicitis, Holden says: The electric hot wire eliminates many cervix operations and long courses of local treatment (with their consequent fees), being especially adapted to uncomplicated raw areas, to virginal, senile, polypoid and cystic forms to obstinate infections and cysts up the canal; to erosions between labors, and to eliminating or lessening the amount of cervix surgery in multiple operations. Plastic surgery is called for when other operations are needed, for long conical cervix, for obstinate relapses, and when local applications suffice for simpler conditions and edemas.

Routine Premarital Examinations.—Based on a long series of patients' histories and decades of premarital instruction, Dickinson's study considers preventable maladjustments, such as inhibitions that result in frigidity and details of anatomic abnormalities that produce pain in coitus, and vaginismus. He urges the profession to develop systematic methods to forestall such troubles. Medical advice on major problems before engagements are announced, and complete examination before wedding days are fixed, should come through custom rather than by compulsory laws. The clear-cut duty of the physician is positive. His job is to forestall trouble, and to seek occasions for forestalling trouble.

Results of Operation for Prolapse of Uterus.—Of 220 operations for prolapse of the uterus in 212 patients reported on by Baer and Reis, twenty-five (11.4 per cent) were done for first degree prolapse, seventy-three (33.2 per cent) for second degree prolapse, and 122 (55.4 per cent) for third degree prolapse. Eleven types of operations were employed. On the basis of the immediate and remote results, four of these seem best suited to meet particular indications; namely, the Gilliam suspension with vaginal reconstruction; the Watkins interposition operation; the Murphy extrafascial fixation operation, and the LeFort vaginal occlusion operation. There were four deaths (1.8 per cent). One was from cardiac dilatation and shock, one from lobar pneumonia, one from cerebral embolism and one from hemorrhage and shock. End-results by personal examination were obtained after 148 operations (69 per cent). One hundred and twenty-seven (85.8 per cent) were successful; nine (6.1 per cent) were partially successful, and twelve (8.1 per cent) were failures. In the cured and improved groups combined, 136 (91.9 per cent) were successful.

Results of Use of Oxytocin and Vasopressin.—Observations made by Ward et al. failed to disclose any marked difference in the oxytocic action of oxytocin and pituitary extract. There appeared to be a slight difference in favor of oxytocin. The oxytocin demonstrated that it fulfilled every requirement necessary for oxytocic action in obstetric usage. The authors are of the opinion, therefore, that it equals pituitary extract for obstetric purposes. There is a definite difference in the blood pressure raising action of oxytocin as contrasted with vasopressin and pituitary extract, and vasopressin is somewhat more potent in this regard than pituitary extract. The pulse rate is slightly lower with vasopressin and pituitary extract than with oxytocin. The use of oxytocin would appear to be most desirable in those obstetric conditions in which there is high blood pressure, as in toxemia and eclampsia. Vasopressin would be indicated in cases of surgical shock to raise abnormally low blood pressure and in diabetes insipidus. Pituitary extract would probably be most suited for cases of postoperative atony of the intestines or bladder, in which the combined effect on the blood vessels and the nonstriated musculature was desired.

Results of Operations for Cystocele.—In the 100 cases of cystocele analyzed by Norris and Kimbrough, a perfect anatomic result was obtained in eighty-six, a fair anatomic result in ten and a poor anatomic result in four. Five different combinations of operative procedure were utilized in this group of cases. It appears that better results were obtained in those cases in which the uterus was either suspended or removed by the abdominal route. The high percentage, 90, of good results in the fifty-four cases treated by simple anterior colporrhaphy was most encouraging. Seventy-six patients complained of vesical symptoms prior to operation. The remaining twenty-four patients did not complain of any urinary symptoms and sought relief only on account of the uncomfortable protrusion from the vaginal orifice. The anatomic and functional results were practically equal in each of the groups. However, with only one exception, all of the patients with fair or poor anatomic results had perfect vesical function; and all of the patients with persistent urinary complaints showed, on examination, a perfect anatomic result from operation. In other words, a poor anatomic result is compatible with perfect vesical function, and vice versa as determined by the ordinary pelvic examination.

Tuberculous Salpingitis.—Smith analyzed sixty-three cases representing less than 0.5 per cent of patients undergoing laparotomy in a gynecologic clinic, and 2.26 per cent of all tubal inflammations. The disease makes itself known almost exclusively in the third and fourth decades, its highest incidence being in women between the ages of 25 and 30. The percentage of sterility in the series is 64.8, as against a 10 to 16 percentage among women in general. A family or past history of tuberculosis, or suggesting it, was given by 20 per cent of patients. The patients' complaints did not afford any definite clue toward the making of a preoperative diagnosis. The duration of symptoms varied from two weeks to eighteen years. There were no menstrual complaints in 22.2 per cent of patients. In 53.9 per cent acquired dysmenorrhea was present. Physical signs of possible pulmonary involvement were found in 19.04 per cent of this series, although there were only seven complaints that could be interpreted as indicating lung disease, and these were not chief complaints. Eleven patients, 17.4 per cent of the series, are known to have died of probable tuberculosis. Five of these eleven, 7.9 per cent of the total, died of probable pulmonary tuberculosis. Only two showed pulmonary signs at the time of operation. In only 53.9 per cent of cases was the disease apparently localized in one or both fallopian tubes. The primary operative mortality was 3.17 per cent. Operation was probably a contributary cause of death in at least two other instances. No later pregnancy is known to have occurred in any of these patients.

American J. Surgery, New York

5: 433-535 (Nov.) 1928

*Single Trauma, Carcinoma and Workmen's Compensation. J. M. Wainwright, Scranton, Pa.—p. 433.
Chemical Blood Changes Produced by Obstructive Lesions of Urogenital Tract. C. G. Bandler, J. A. Killian and M. B. Johnston, New York. —p. 440.
Treatment of Bladder Paralysis Due to Nontabetic Spinal Cord Lesions. G. F. Cahill, New York.—p. 442.

Ureteral Obstruction in Infancy. M. F. Campbell, New York.—p. 445.
Cystography as Aid to Urologic Analysis. J. S. Ritter, New York.—p. 454.
*Chronic Abscess of Bone (Brodie). A. O. Wilensky, New York.—p. 455.
Complete Development of Biliary Tract Lesions and Effects of Surgical Forms of Treatment. A. O. Wilensky, New York.—p. 460.
Relative Value of Wertheim and Schauta Operations in Cancer of Cervix. A. Wollner, New York.—p. 468.
Treatment of Hip-Joint Disease. J. J. Nutt, New York.—p. 472.
Fracture of Femur with Knee Joint Ankylosis. P. N. Jepson, Philadelphia.—p. 475.
Comparative Activity of Some Local Anesthetics on Mucous Surfaces of Urinary Tract. G. A. Fiedler, New York.—p. 480.
*Surgical Pathology of Goiter: Comparison with Clinical Phenomena. L. Edelman and P. W. Aschner, New York.—p. 483.
Duodenal Diverticula: Two Cases. R. C. Pendergrass, Americus, Ga.—p. 491.
New Irrigating Ureteral Bougie. A. Ravich, New York.—p. 498.
New Improved Cystoscope. A. Ravich, New York.—p. 499.
New Lithotriptoscope. A. Ravich, New York.—p. 501.
Cystoscopic Lithotrite and Rongeur or Foreign Body Extractor. J. J. Valentine, New York.—p. 503.
Simple Ambulatory Foot Splint. C. R. Keppler, Newark, N. J.—p. 504.
Clubfoot Brace. C. R. Keppler, Newark, N. J.—p. 506.
Apparatus for Reduction of Fracture Dislocations of Cervical Spine. J. E. J. King, New York.—p. 507.
New Splint for Finger Tip Fractures. J. D. Ellis, Chicago.—p. 508.
Massive Collapse of Lung; Eight Cases. C. L. Gibson, New York.—p. 509.
Large Ovarian Cyst Complicated by Malignant Malaria and Ankylostomiasis. N. Nedergaard, Bangkok, Siam.—p. 511.
Multiple Cysts of Mesentery. E. W. Peterson, New York.—p. 514.
Intestinal Obstruction and Multiple Fecal Fistulas Following Operation for Appendicitis. E. W. Peterson, New York.—p. 516.
Aneurysm of Innominate: Synchronous Ligation of Subclavian and Common Carotid with Long Survival. J. F. Baldwin, Columbus, Ohio.—p. 517.
Strangulated Inguinal Hernia in Infant Twenty-Seven Days Old. J. M. Troutt, Honolulu.—p. 518.

Single Trauma Precedes Development of Malignant Tumor.—Wainwright reports three cases in which apparently a single trauma was followed by the development of a malignant tumor. A man, aged 44, struck himself a severe blow on the cheek with a wrench. The external surface of the cheek was not broken but the mucous membrane on the inner side was broken and bled. This wound in the mouth healed after about two weeks. At about this time a "pimple" formed on the skin surface. This broke open, began to bleed, and grew rapidly, reaching a considerable size in about eight weeks from the original injury. A biopsy at this time showed squamous epithelioma. The second patient, aged 62, while driving his truck, had his right ear frostbitten; the skin at the top of the pinna remained rough, thick and tender; gradually this thickening became more prominent and very slowly increased in size. It was excised. Microscopic examination showed basal cell epithelioma. The third patient, aged 15, sustained an abrasion about the middle of the shin; the wound never healed. Seven months after the injury, the ulcerated area was grafted, without success. The Wassermann reaction was negative. The ulcerated area continued to spread, and at the end of one year it was 3 inches in diameter. Biopsy disclosed squamous epithelioma.

Chronic Abscess of Bone.—Wilensky reports five cases. He says that the impression is given distinctly and seems to be corroborated by clinical and pathologic studies that Brodie's abscess is a chronic abscess of bone which has its origin in a thrombophlebitis developing around a thrombo-embolus arrested in a terminal vessel of the vascular network of the diaphysis of a long bone. This lesion is the end-result of one of the manifestations of acute osteomyelitis and should be so classified.

Goiter: Comparison of Surgical Observations with Clinical Phenomena.—A summary of the pathologic observations in relation to the clinical diagnosis in 173 cases of goiter is given by Edelman and Aschner. The pathologic and clinical observations were compatible in 155 instances, or about 90 per cent. Of eighty-eight cases presenting the clinical characteristics of exophthalmic goiter, hyperplasia of the thyroid gland tissue was observed in seventy-eight instances, about 88 per cent. The authors believe that the broad point of view of Marine concerning the physiology of the thyroid gland and the relationship of iodine deficiency to hyperplasia is correct in every way. On the other hand, they believe that hyperplasia in the human thyroid, occurring at a time when there is no normal demand for it, is an essential part of exophthalmic goiter at its onset. The complete involution of the gland, occurring as it may in the natural course of the malady, or rapidly induced by the administration of iodine, is not indicative of cure nor of permanent improvement in the clinical course. It follows from the fact that the disease is not necessarily cured when such involution does take place that the thyroid gland alterations are not primary, but nevertheless are important in the pathology. While, in view of all the known facts, hyperplasia of the thyroid gland is not synonymous with exophthalmic goiter, its high incidence in the specimens removed from such cases (88 per cent in this series) is a finding of practical value for both the pathologist and the clinician.

American J. Tropical Medicine, Baltimore

8: 507-574 (Nov.) 1928

Certain Conditions of Gastro-Intestinal Tract in Porto Rico and Their Relation to Tropical Sprue. B. K. Ashford, San Juan, P. R.—p. 507.
Relation of Beriberi to Polyneuritis from Other Causes. G. C. Shattuck, Boston.—p. 539.
Cancer (?) in Certain Protozoa. M. M. Metcalf.—p. 545.
Relation of Plasmodium Falciparum to Human Red Blood Cell as Determined by Sections. H. L. Ratcliffe, Baltimore.—p. 559.
*Diagnosis of Endemic Yellow Fever. W. H. Hoffmann, Havana, Cuba.—p. 563.

Diagnosis of Endemic Yellow Fever.—Hoffmann emphasizes the fact that the diagnosis of endemic yellow fever is not as easy as that of the severe epidemic disease, though the former is even more important for the survey and control operations, which in the endemic centers always have to be preceeded by exact diagnostic work if they are to be effective. An opinion on the definite results of the hygienic measures can be formed only if the diagnostic service is based on completely reliable methods. With great care and experience on the part of the responsible authorities, it will often be possible, in spite of all the difficulties, to make the clinical diagnosis in suspicious cases, if each patient with fever is especially examined for the possibility of yellow fever until the nature of the condition is clear. As long as the clinical methods are insufficient and bacteriologic methods do not exist, the anatomic diagnosis is decisive and should be made in all persons who die in the endemic territory from suspicious infections, or in mild cases in the monkeys infected with the blood of such patients. This is probably the quickest and most reliable way to prove the presence of endemic yellow fever in a given area beyond any doubt.

Archives of Dermatology and Syphilology, Chicago

18: 809-998 (Dec.) 1928

Bowen's Disease and Paget's Disease of Nipple: Their Relation to Dyskeratosis. J. F. Fraser, New York.—p. 809.
Comparison of Ringworm Culture Ingredients: II and III. F. D. Weidman and D. Spring, Philadelphia.—p. 829.
Cultures of Ringworm Fungi on Sabouraud's Proof Mediums and on Mediums Prepared with American Peptones and Sugars. R. S. Hodges, University, Ala.—p. 852.
Pseudomycosis Due to Coccus: Micrococcus Myceticus. A. Castellani, New Orleans.—p. 857.
*Chrysoderma: Permanent Gold Staining of Skin. J. F. Schamberg, Philadelphia.—p. 862.
Urticaria: III. Experimental Urticaria Factitia. A. Walzer, New York.—p. 868.
*Liver Diet in Acne Vulgaris and in Furunculosis. R. L. Sutton, Kansas City, Mo.—p. 887.
Pathogenesis of Trichophytids: Spontaneous Passage of Formed Elements (Spores) from Primary Lesion into Circulating Blood. M. B. Sulzberger, New York.—p. 891.

Permanent Gold Staining of Skin.—Schamberg reports a case of staining of the skin with gold following the therapeutic administration of this metal. A woman, aged 45, suffering from lupus erythematosus of twelve years' standing, received ten injections of a gold compound, with some improvement; after the last treatment, she developed an erythematosquamous dermatitis. Later she consulted Schamberg, and, because of her apparent hypersusceptibility, he advised her physician to use a special form of colloidal gold. One injection was successfully administered by her physician. When the second dose was given, the needle slipped outside the vein, and in a few days an extensive greenish-blue discoloration became apparent. This discoloration has not undergone any change in the past six months, despite various efforts to effect its disappearance. The color is between a greenish blue and an indigo blue.

Liver Diet in Acne and Furunculosis.—Sutton reports on his experiences with liver and liver extract in the treatment of acne and furunculosis. The extract has been employed only

in a supplementary capacity, and only in particularly resistant and obstinate cases. The most satisfactory results in acne were secured in those patients presenting deep seated lesions of an indolent type, common in patients whose skins are pale, moist and flabby, and lacking in both tonicity and color. The total quantity of extract ingested varied from twenty-four to seventy-two doses, an amount of the preparation equaling one-fourth pound of liver being taken twice daily for twelve days. This was followed by a rest period of one or two weeks, and then, if necessary, the procedure was repeated. The method proved the most satisfactory one in chronic furunculosis, as well as in acne vulgaris. At no time did the ingestion of the liver substance or extract give rise to any untoward symptoms.

Colorado Medicine, Denver

25: 383-436 (Dec.) 1928

Removal of Magnetizable Metal from Eyeball. W. C. Bane, Denver.—p. 385.
Summary of Two Years' Bacteriologic Testing of Denver City Water and Possible Responsibility of City Water for Intestinal Diseases in Denver. I. C. Hall, Denver.—p. 391.
Cysts of Appendix: Case. M. J. Baskin, Denver.—p. 396.

Journal of Preventive Medicine, Chicago

2: 551-544 (Nov.) 1928

*Incidence of Pfeiffer's Bacillus in Throats During Epidemic and Interepidemic Periods in Chicago. J. M. Bourn, Chicago.—p. 441.
*Negative Results Obtained on Introducing Heat-Killed Cultures of Salmonella Aertrycke and Salmonella Enteritidis into Intestinal Tract of Monkeys and Other Animals. G. M. Dack, P. H. Harmon and I. E. Jarra, Chicago.—p. 461.
*Unsuccessful Attempt to Produce Salmonella Intoxication in Man. G. M. Dack, W. E. Cary and P. H. Harmon, Chicago.—p. 479.
Interdigital Ringworm Control Among Students. W. B. Sharp, Galveston, Texas, and E. K. Taylor, Chicago.—p. 485.
Actinic Measurement of Solar Ultraviolet Rays and Some Correlations with Erythema Dose. F. O. Tonney, P. P. Somers and W. C. Marti, Chicago.—p. 493.
*Intradermal Reaction in Experimental Trichiniasis. G. W. Bachman, Chicago.—p. 513.
Return to Normal of Asexual Cycle in Bird Malaria After Retardation by Low Temperatures in Vitro. L. G. Taliaferro, Chicago.—p. 525.

Incidence of Pfeiffer's Bacillus in Normal Throats.—Pfeiffer's bacillus was found by Bourn with relative frequency in normal throats in interepidemic times. In one period marked by an unusual number of acute respiratory infections, the incidence of this organism in persons with normal throats was considerably increased. In throat cultures from patients with lobar and bronchopneumonia and pulmonary tuberculosis, the Pfeiffer bacillus was found much more frequently than in cultures from normal throats. In persons suffering with colds, sore throats, or some mild irritation of the respiratory mucosa, the incidence of the bacillus was slightly higher than that observed in persons with normal throats. The Pfeiffer bacillus was found in normal throats in interepidemic periods in the same proportion as it was found in association with the diseases of childhood. The data presented indicate a fluctuation of the incidence of the Pfeiffer bacillus in throats rather than a seasonal variation. No consistent decrease in the incidence of this organism in throats since the 1918 epidemic is indicated.

Experimental Inoculation of Salmonella Aertrycke.—Monkeys, rabbits, dogs and cats, fed with heat-killed cultures of *Salmonella aertrycke* by Dack et al., failed to show the characteristic gastro-intestinal disturbances present in man in paratyphoid intoxication.

Man Resists Salmonella Aertrycke Inoculation.—Heat-killed dextrose-broth beef-heart cultures and filtrates of five strains of *Salmonella aertrycke* and four strains of *Salmonella enteritidis*, when fed in large amounts to twenty-four adults on an empty stomach, failed to produce any symptoms, although the same materials produce symptoms and death when injected intravenously into rabbits in 0.5 to 2 cc. amounts. No agglutinins for homologous strains were found by Dack et al. in the serums of these subjects ten days after feeding.

Intradermal Reaction in Experimental Trichiniasis.—Thirty-three rabbits and twelve guinea-pigs infected with *Trichinella* showed a local skin reaction, specific in character, following the intracutaneous injection of *Trichinella* protein. Twenty-five of the rabbits and all of the guinea-pigs when tested by Bachman before infection gave uniformally negative skin reactions. Typical skin reactions appeared as early as the second day after infection; but in view of the fact that the preliminary skin test may have caused a local hypersensitivity, it is probably safer to conclude that typical skin reactions appear within the first week after infection. The reaction seems specific to *Trichinella* proteins since fairly negative results were obtained with *Ascaris* protein. As a method of diagnosis the skin reaction is easy and much more practical than the precipitin test, since typical skin reactions appear from twenty to thirty days before the precipitins are demonstrable in the blood stream.

Kansas M. Society Journal, Topeka

29: 391-422 (Dec.) 1928

Epidemic Encephalitis and Country Doctor. B. A. Higgins, Sylvan Grove.—p. 391.
Drainage in Abdominal Infections. F. D. Kennedy, Norton.—p. 397.
Importance of Care of Newly Born Infant. F. C. Neff, Kansas City, Mo.—p. 398.
Premature Pronouncement of Dissolution. R. G. Breuer, Haddam.—p. 404.

Laryngoscope, St. Louis

38: 693-760 (Nov.) 1928

Diagnosis and Localization of Intracranial Lesions Considered as Research Field: Cases. M. F. Jones, New York.—p. 693.
Brain Abscess in Frontal Lobe Resulting from Acute Frontal Sinusitis and Osteomyelitis of Orbital Plate. F. H. Brandt, Los Angeles.—p. 712.
Reasons for and Results of New Operation for Deafness. J. N. Watt, Durban, Natal, South Africa.—p. 723.
Ménière's Disease: Case. L. K. Gundrum, Los Angeles.—p. 726.
Herpes Zoster (Intercostal) and Intercostal Neuralgia Relieved by Sphenopalatine Ganglion Treatment. S. L. Ruskin, New York.—p. 729.
New Nasal Douche and Aural Irrigator. R. M. Colbert, New York.—p. 732.
Resector for Removing Shaped Piece of Rib Cartilage for Nasal Transplant. C. H. Fornell, New York.—p. 733.

Medical Journal and Record, New York

128: 553-612 (Dec. 5) 1928

Forty Years of Antituberculosis Work. S. A. Knopf, New York.—p. 553.
Roentgen Therapy of Neurocirculatory Diseases. H. B. Philips, New York.—p. 559.
Hypercholesterolemia: Adenocarcinoma of Papilla of Vater: Autopsy. L. N. Boston and F. J. Jodzis, Philadelphia.—p. 561.
Diagnostic Consideration of Older and Later Views on Aphasia Based on Anatomic Findings of Case of Typical Motor Aphasia. A. Gordon, Philadelphia.—p. 564.
Cancer of Breast: Statistical Study in Pennsylvania. H. B. Wood, Harrisburg, Pa.—p. 567.
Mental Diseases Viewed and Treated from Various Angles. B. C. Keister, Harrisonburg, Va.—p. 569.
*Synthetic Compound of Methenamine and Acetylaminosalicylic Acid in Treatment of Arthritis. E. P. Corson-White, Philadelphia.—p. 573.
Another Case of Apparent Hour-Glass Stomach Cured by Medical Means. M. Einhorn, New York.—p. 575.
Complemental Enterostomy in Treatment of Neglected Cases of Acute Appendicitis. H. Koster, New York.—p. 580.
Multiple Consecutive Perforated Gastrojejunal Ulcers: Case. P. I. Nixon and S. T. Lowry, San Antonio, Texas.—p. 584.
Clinical Evaluation of Liver Function Tests. V. Knapp, New York.—p. 586.
Roentgenologic Diagnosis of Gallbladder Disease. J. Friedmann, New York.—p. 588.
Children of Renaissance and Medicine. J. Wright, Pleasantville, N. Y.—p. 591.
Mahlon Loomis, Doctor of Medicine and Pioneer in Radio Engineering. E. Podolsky, New York.—p. 594.
Antirheumatic Center at Brussels. I. Gunzburg, Brussels.—p. 600.

Treatment of Arthritis.—Corson-White reports on his experiences with the use of a new synthetic compound of methenamine and acetylaminosalicylic acid in the treatment of chronic arthritis. The drug apparently stimulates the body defenses, eliminates muscle spasm, reduces swelling and acts both as an analgesic and a germicide. In thirty unselected cases the drug was administered intravenously in courses of fifteen daily doses, each consisting of 10 cc. of a 10 per cent aqueous solution of the drug, with a rest period of ten days between successive courses. The total number of injections necessary for each case depends entirely on the individual response to the drug. Marked improvement was produced in eight cases, moderate improvement in twelve, and slight improvement in five. The drug failed to exert any therapeutic effect in only five instances.

Michigan State M. Society Journal, Grand Rapids

27: 793-860 (Dec.) 1928

Present Needs in Michigan for Care of Insane and Feebleminded. R. H. Haskell, Northville.—p. 793.
*Loose Cartilages in Temporomandibular Articulation. H. B. Knapp, Battle Creek.—p. 793.
Bladder Wounds: Eleven Cases. W. E. Keane, Detroit.—p. 801.
Lupus Erythematosis. N. E. Aronstam and J. L. Rosefield, Detroit. —p. 807.
Acute Pancreatitis Followed by Pseudocyst. W. H. Marshall, Flint.—p. 811.
Surgical Indications in Thyroidism. L. M. Bogart, Flint.—p. 814.
Indexing and Filing Hospital Case Records: Method Employed at Harper Hospital, Detroit. C. E. Dutchess, Detroit.—p. 815.
*Icterus Index Studies in Lobar Pneumonia. N. W. Elton, Highland Park.—p. 818.
Chronic Kidney Infections. E. Cathcart, Cleveland.—p. 819.
Autopsies: Their Importance, with Suggestions for Increasing Hospital Necropsy Percentages. R. M. McKean, Detroit.—p. 822.
Tularemia in Michigan: Typhoid Type. G. L. Coan, Wyandotte.—p. 825.

Loose Cartilages in Temporomaxillary Articulation.—Knapp reports the case of a girl, aged 18, who, while yawning, apparently dislocated her jaw on the right side. The mouth was locked wide open, and there was excruciating pain in the right side of the face. While the usual procedure for reducing a dislocated jaw was being attempted, the joint unlocked with a snap and the patient was relieved. Following this, the temporomandibular joint was swollen and tender. The next day the jaw again became fixed with the mouth wide open, and from this time on it became a daily occurrence whenever the patient talked, laughed or yawned, or while eating. The patient learned to unlock the jaw quite readily, but in two or three months it became a matter of reducing it as many as thirty or forty times a day. The painfulness of the condition varied inversely with the frequency. A relaxed capsular ligament seemed to be the most likely condition needing correction. The capsule of the joint was exposed, but it could not be demonstrated to be relaxed, and any manipulation of the jaw did not reproduce the locking. An incision, however, through the joint capsule readily disclosed the cause of the trouble. Two small pieces of cartilage, attached by a thin fibrous pedicle, presented themselves in the joint. They were snipped off, and as no others could be found, the capsule was closed. No further trouble has been experienced.

Icterus Index Studies in Lobar Pneumonia.—In seven consecutive hospitalized patients with lobar pneumonia, a disturbance of the blood-bile content as shown by the icterus index was noted by Elton. Of four who recovered, an early rapid rise or a delayed but rapid and persistent rise was observed in three. In those that recovered, an index of above 20 was sustained at the crisis in two, and a marked secondary rise occurred on the second day after the crisis. In another patient who recovered, a determination was not done on the day of the crisis, but a prompt increase in blood-bile content occurred previous to it. Three recovered patients showed a maximum at the time of the crisis, followed by a marked drop on the succeeding day. One case was not studied early enough to be of value. Two recovered patients showed an elevation above normal persisting for several days after the crisis. The fatal cases inconclusively indicated either a failure of the blood-bile concentration mechanism or an inadequate rate of rise early enough in the course of the disease.

Military Surgeon, Washington, D. C.

63: 785-942 (Dec.) 1928

Malaria Control at Camp Stotsenburg, P. I. A. L. Parsons.—p. 816.
Physical Therapeutic Treatment of Common Skin Diseases. J. M. Troutt and H. A. Gibson.—p. 830.
Traumatic Intestinal Rupture. D. F. Winn.—p. 837
Fracture of Spine. C. A. Stammel.—p. 843.
Cattaro. A. S. Dolloff.—p. 853.
Educational Value of Annual Physical Examination. D. C. Absher.—p. 858.

Nebraska State M. Journal, Norfolk

13: 441-476 (Dec.) 1928

Circulatory Disorders. A. D. Dunn, Omaha.—p. 441.
Malarial Therapy of Paresis. G. A. Young, Omaha.—p. 445.
Practical Surgery. J. E. Summers, Omaha.—p. 450. (C'td.)
Skin Plastics: Types and Indications. W. R. Mechtenberg, Omaha.—p. 454.
Gallbladder and Cystic Duct (Clinical Anatomy). R. R. Best, Omaha. —p. 457.
Hyperinsulinism: Case. R. E. Sawyer, Doniphan, and E. E. Farnsworth, Grand Island.—p. 459.
Urethral Carbuncle. A. A. Conrad, Crete.—p. 460.
Pilots and Their Medical Examinations. C. W. Keith, Edgar.—p. 462.
Diarrheas of Aged. F. A. Mountford, Davenport.—p. 463.
Delinquency and Crime. T. L. Houlton, Omaha.—p. 464.

New England J. Medicine, Boston

199: 1129-1188 (Dec. 6) 1928

Pancreatic Calculi. L. B. Morrison, Boston, and I. K. Bogan, Brookline, Mass.—p. 1129.
*Adenoma of Suprarenal Cortex. J. B. Hicks, Boston.—p. 1140.
*Outbreak of Gastro-Intestinal Disturbance Following Eating of Chocolate Cream Pie. N. A. Nelson, Boston.—p. 1145.
Diagnosis and Treatment of Uterine Cancer. H. Schmitz, Chicago. —p. 1149.
Treatment of Uterine Carcinoma. G. C. Wilkins, Manchester, N. H. —p. 1154.

Adenoma of Suprarenal Cortex.—Hicks' patient was a woman, aged 48. The case is interesting from several points of view. The mass on palpation was typical of an enlarged spleen, and the pyelograms were typical of a large hypernephroma, as were the operative observations. The pathologic examination alone settled the diagnosis and prognosis. No symptoms of virilism were noted before or after the nature of the tumor was known. The patient did, however, show quite marked generalized yellowish-brown pigmentation of the skin, which completely disappeared in a short time after operation. The pigmentation is rare, and it seems unusual that it was present without other symptoms of the syndrome. The growth had not invaded the kidney tissue, but was attached to it, and if it caused blood in the urine, this must have been due to pressure on the kidney. At first glance, when the abdomen was opened, it seemed that the tumor was inoperable. On further investigation, however, it was evident that it could be freed more easily than was at first anticipated.

Intestinal Toxemia from Eating Chocolate Cream Pie.—Nelson reports on 151 persons who became ill one afternoon with an acute gastro-intestinal disturbance, characterized by severe abdominal cramps, vomiting, diarrhea and, in many cases, collapse. The illness was of such severity that seventy-eight, or 55 per cent, were known to have been treated in hospitals. The poisoning—for such it proved to be—was caused by eating chocolate cream pie. The cream filling evidently was to blame.

New Jersey M. Society Journal, Orange

25: 761-854 (Dec.) 1928

Plea for Early Recognition of Cancer. E. J. Ill, Newark.—p. 761.
Recent Advances in Gynecology. J. O. Polak, New York.—p. 764.
Influence of Blood Chemistry Studies on Present Treatment of Pregnancy Toxemias. P. Titus, Pittsburgh.—p. 771.
Cesarean Section and Forceps: When They Must Not Be Used. S. A. Cosgrove, Jersey City.—p. 776.
Interpretation of Visual Fields. N. L. Wilson, Elizabeth.—p. 783.
Retinal Disease with Massive Exudation: Case. W. G. Mengel, Camden. —p. 788.
Acidified Milk in Infant Feeding. F. I. Krauss, Chatham.—p. 792.
Essentials in Differential Diagnosis of Heart Murmurs in Children. S. Nichols, Asbury Park.—p. 797.

New Orleans Medical and Surgical Journal

81: 377-456 (Dec.) 1928

Appendicitis in Children. C. J. Bloom, New Orleans.—p. 377.
Radium in Cancer of Cervix: Cases. J. Cohen, New Orleans.—p. 401.
Roentgen Treatment of Malignant Bone Tumors: Cases. C. P. Rutledge, Shreveport, La.—p. 406.
Radiation in Sarcomas. L. Fortier and T. T. Gately, New Orleans.—p. 412.
Diphtheria. R. T. Lucas, Shreveport, La.—p. 414.
Ptosis Support for Very Thin Individual. A. K. Duncan, New Orleans. —p. 423.
Use of Lipiodol as Aid to Diagnosis of Nasal Sinus Conditions. A. I. Weil and W. F. Henderson, New Orleans.—p. 426.
Myopia is Essentially Pathologic Condition. T. J. Dimitry, New Orleans. —p. 432.
Some Principles and Practices in Cardiology. G. R. Herrmann, New Orleans.—p. 436.

New York State J. Medicine, New York

28: 1395-1458 (Dec. 1) 1928

*Management of Dropsies. W. S. McCann, Rochester.—p. 1395.
*Irradiated Ergosterol in Treatment of Tetany. M. Gleich and S. Goodman, New York.—p. 1398.
Coming Generation. J. H. Dowd, Buffalo.—p. 1400.
Health Conditions in Soviet Union. J. V. DePorte, Albany.—p. 1403.
Sinus Conditions Associated with Cough in Tuberculosis. H. St. J. Williams, Poughkeepsie.—p. 1406.

Nonoperative Treatment of Intussusception. G. M. Retan, Syracuse.—p. 1408.
Epidemiology of Whooping Cough. E. S. Godfrey, Jr., Albany.—p. 1410.
Cancer Situation in State of New York: IV. 1927 Statistics. J. M. Swan, Rochester.—p. 1416.
Gumma of Orbit. T. LeWin, Buffalo, and C. White, Chicago.—p. 1417.
Aid for Needy Physicians. L. R. Williams, New York.—p. 1418.
Sketch of Plan to Found Organization to Provide Pensions for Physicians After Age of Sixty Years. E. L. Meierhof, New York.—p. 1419.

Management of Dropsies.—McCann summarizes his paper as follows: The basis of management of all dropsies is restriction of salt intake. The circulatory factor in an extensive dropsical state is best determined by the response to full physiologic doses of digitalis. Residual edema after digitalization, in cases of circulatory origin, is often relieved by doses of potassium citrate of from 20 to 24 Gm. daily. In edemas associated with nephritis with hematuria, water is the safest diuretic. A water diuresis may often be obtained, provided the diet is salt free. A water diuresis, if obtained, is valuable in relieving the intoxication of renal insufficiency. Calcium salts may be tried in obstinate cases of dropsy with renal disease in the chronic stages. Definite calcium intoxication has been observed in three cases, with weak rapid pulse, low blood pressure and asthenia. The antidote is sodium. Further trials of parathyroid extract have been disappointing. The evidence indicates that it will sometimes accelerate a diuresis already started. Underlying some cases of obstinate dropsy there may be a thyroid insufficiency, and one must also remember that long continued protein starvation may be a contributing factor. In dropsy with nephritis, as well as with nephrosis, a liberal protein ration may be beneficial, if protein intake has been previously restricted to an extreme degree.

Irradiated Ergosterol in Treatment of Tetany.—Gleich and Goodman report three cases in which the administration of irradiated ergosterol markedly increased the blood serum calcium in a few days. Furthermore, it promptly stopped the convulsions in infants who were in a tetanoid state.

Northwest Medicine, Seattle

27: 501-556 (Nov.) 1928

Questions Before Oregon Profession. H. S. Mount, Oregon City.—p. 501.
Abdominal Surgical Emergencies. I. Cohn, New Orleans.—p. 505.
Clinical and Laboratory Findings: Comparative Interpretation and Value. A. E. Mark, Los Angeles.—p. 514.
Pyelonephritis. A. H. Crosbie, Boston.—p. 516.
Stricture of Female Urethra. A. E. Anderson, Aberdeen, Wash.—p. 520.
Collings Operation. C. F. Engels, Tacoma, Wash.—p. 524.
*Comparison of Wassermann and Precipitation Reactions in Pregnancy. S. S. Jones, Tacoma, Wash.—p. 526.

Comparative Value of Hinton and Wassermann Tests.—In 400 Wassermann and Hinton reactions reported on by Jones, there were 384 agreeing as negative, and seven agreeing as positive. There were three in which the Wassermann reaction was negative and the Hinton positive; one was in a treated case of syphilis; another was considered positive from the history and physical signs, and the third was in a patient who gave no history or symptoms of syphilis. There were six specimens that gave a weakly positive Wassermann and a negative Hinton reaction. All of these were considered negative. This gives twelve positive reactions in 500 cases, or an incidence of 2.4 per cent, approximately what other investigators have found in prenatal clinics in which the large majority of patients are white women. Jones considers a routine blood Wassermann test on prenatal patients of definite value in the diagnosis of syphilis. If this is checked by a precipitation reaction, the value is increased. The best precipitation reaction for this purpose in his estimation is the Hinton test.

Ohio State M. Journal, Columbus

24: 921-1000 (Dec.) 1928

Cancer of Large Intestine. G. W. Crile, Cleveland.—p. 941.
Importance of Early Diagnosis of Pulmonary Tuberculosis and Some Newer Methods of Treatment. C. L. Hyde, East Akron.—p. 943.
Diagnostic and Prognostic Significance of Retinal Hemorrhage. F. W. Lamb, Cincinnati.—p. 949.
Endocrinologic Aspects of Some Neuropsychiatric Conditions. J. D. O'Brien, Canton.—p. 952.
Are There Causes for Controversy Between Physicians and Public Health Organizations? J. F. Elder, Youngstown.—p. 954.
Diagnosis of Smallpox and Chickenpox. A. Faller, Cincinnati.—p. 958.
Elongation of Styloid Process of Temporal Bone. M. D. Shie, Lakewood.—p. 960.

Oklahoma State M. Association Journal, Muskogee

21: 309-344 (Nov.) 1928

Acute Gonorrhea in Female. J. H. Hays, Enid.—p. 309.
Surgical Treatment of Gonorrhea in Women. F. A. Hudson, Enid.—p. 311.
Posterior Urethra. O. R. Gregg, Enid.—p. 314.
Penile Sores. G. L. Borecky, Oklahoma City.—p. 318.
Elusive Ulcer of Bladder. J. Z. Mraz, Oklahoma City.—p. 320.
Leukoplakia of Trigone. H. W. Callahan, Tulsa.—p. 323.
Urologic Problems. S. DePorte, Oklahoma City.—p. 325.
Author's Cautery Punch for Prostatic Obstruction. J. R. Caulk, St. Louis.—p. 327.

Philippine Islands M. Association Journal, Manila

8: 411-460 (Oct.) 1928

Rate of Growth of Christian Population of Philippines. H. Lara and C. Ortigas, Manila.—p. 411.
Problems of Board of Medical Examiners. B. J. Valdes, Manila.—p. 418.
Report of Committee on Beriberi. L. Lopez-Rizal, Chairman, Manila.—p. 422.

Surgery, Gynecology and Obstetrics, Chicago

47: 751-896 (Dec.) 1928

*Electrosurgery as Aid to Removal of Intracranial Tumors. H. Cushing, Boston.—p. 751.
*Uterine and Tubal Decidual Reaction in Tubal Pregnancy. A. R. Moritz and M. Douglass, Cleveland.—p. 785.
*Tuberculosis of Genital Tract. H. C. Bumpus, Jr., and G. J. Thompson, Rochester, Minn.—p. 791.
Removal of Stones from Common and Hepatic Bile Ducts in Jaundiced Patients. W. Walters, Rochester, Minn.—p. 800.
Pathology of Epididymitis. H. C. Rolnick, Chicago.—p. 806.
*Clinical Index of Malignancy for Carcinoma of Breast. B. J. Lee and J. G. Stubenbord, New York.—p. 812.
*Acute Perforation of Peptic Ulcer: Incidence Among Soldiers in Hawaii. J. M. Troutt, Honolulu.—p. 815.
*Operative Treatment of Traumatic Ulnar Neuritis at Elbow. H. Platt, Manchester, England.—p. 822.
Two-State Laryngectomy. G. B. New, Rochester, Minn.—p. 826.
*Inguinal Herniorrhaphy with Living Fascial Sutures Obtained from Rectus Sheath. E. M. Hodgkins, Boston.—p. 831.
*Muscle-Fascia Suture with Preserved Fascia and Tendon. M. S. Rosenblatt and M. Meyers, Detroit.—p. 836.
*Operation for Ankylosis of Hip Joint. P. W. Roberts, New York.—p. 841.
*Results in Porto Rico of Kondoleon Operations for Elephantiasis of Extremities. G. R. Burke, San Juan, P. R.—p. 843.
Tracheotomy: Technic and After-Care of Patient. W. H. Prioleau, Cleveland.—p. 848.
Technic of Cesarean Section. L. E. Phaneuf, Boston.—p. 851.
*Acute Perforation of Ulcer Following Barium Filling in Routine Gastro-Intestinal Examination. P. F. Eckman, Duluth, Minn.—p. 858.
*Spontaneous Hematoma of Abdominal Wall. G. Halperin, Chicago.—p. 861.
Spinal Anesthesia in Treatment of Paralytic Ileus. W. E. Studdiford, New York.—p. 863.

Electrosurgery as Aid to Removal of Brain Tumors.—Cushing reports on his experiences in removing brain tumors with the aid of Bovie's electrified wire loop. He says that the results have exceeded all expectation, and the methods of brain tumor extirpation have been largely revolutionized by these new principles. Five hundred and forty-seven operations for tumor have been performed. Though for some of these operations the electrical methods were not essential, there were few, even when no tumor was found, in which they could not advantageously be employed. The currents are useful even for such trifles as brushing the surface of the dura with the ball electrode in order to seal the torn meningeal veins, from which persistent oozing may sometimes try one's patience, or similarly for checking the persistently oozing points on the under surface of the reflected bone before its replacement, or for coagulating some refractory vessel on the incised dural margin.

Decidual Reaction in Tubal Pregnancy.—Uterine decidua was found by Moritz and Douglass in only eight of fifty-three cases of proved tubal pregnancy in which histologic examination of the endometrium was made. Evidence is presented to indicate that in cases of tubal pregnancy (*a*) uterine decidua may be, but is not constantly, formed; (*b*) decidua is constantly found at the implantation site, if the chorionic villi are intact. Vaginal bleeding is a common symptom of ectopic pregnancy and is not necessarily associated with the death of the fetus, the condition of the chorionic villi, or the physiologic state of the endometrium.

Tuberculosis of Genital Tract.—A review of the literature and an analysis of 300 cases observed at the Mayo Clinic prior to January, 1923, has convinced Bumpus and Thompson that dysuria is a symptom of urinary tuberculosis and does not

occur when the disease is confined to the genital tract. The presence of the bacilli of tuberculosis in the urine indicates renal involvement. Unless the urine is microscopically negative, cystoscopic examination should be made in all cases of chronic tuberculous epididymitis. Satisfactory late results may be expected in more than 60 per cent of cases. It may be expected that epididymectomy will be followed by involvement of the opposite epididymis in 39 per cent of cases. Usually involvement of the opposite side will occur within one year of the epididymectomy. There is a 7 per cent chance of the development of renal tuberculosis after operation. Conservative treatment, consisting of epididymectomy and heliotherapy, offers a better prognosis than more radical measures.

Clinical Index of Malignancy of Carcinoma of Breast.—The four major clinical factors used by Lee and Stubenbord in estimating the degree of malignancy of carcinoma of the breast are: age, the presence of lactation, the rate of growth and the extent of the disease. These are the weighting factors, and they alone have been considered in building up what the authors have chosen to call "a clinical index of malignancy." The weight assigned, arbitrarily, to each factor was as follows: age, $A = 2$; lactation, $L = 3$; rate of growth, $R = 4$; extent of disease, $E = 5$. Each weighting factor was subdivided into "gradation factors," in a similar manner and arbitrary values were given to each. The clinical index of malignancy for any individual patient is calculated by multiplying the value of each weighting factor by its gradation factor and adding the results.

Incidence of Perforating Peptic Ulcer in Hawaii.—According to Troutt, peptic ulcer occurs half as frequently among white soldiers in Hawaii and perforates four times as frequently as among enlisted men of the army serving in the United States. The number of peptic ulcers and the percentage of ulcers which perforate has appreciably increased in the United States Army during the period from 1922 to 1926. The factors which are responsible for the high incidence of acute perforated peptic ulcer among soldiers in Hawaii are fundamentally psychic and include nostalgia, mental depression, lowered nerve tone, excessive smoking, and, most important of all, the excessive use of impure alcoholic beverages.

Operative Treatment of Traumatic Ulnar Neuritis.—Anterior transposition of the ulnar nerve has been carried out by Platt on more than a hundred occasions for various indications, with most gratifying results.

Herniorrhaphy with Living Fascia Sutures.—Hodgkins describes his method of fascial weaving with attached sutures reflected from the rectus sheath, by which the internal oblique muscle can be fixed either over or under the spermatic cord, as may be indicated by the type of hernia. Hodgkins has used a modified Ferguson technic in most of the indirect cases and the Bassini technic in all of the direct cases, imbricating the aponeurosis of the external oblique whenever possible. Indirect hernias of long standing and with thinned out muscles and a widely dilated triangle also demand a Bassini operation as a rule. Complete hemostasis, a minimum of catgut ties and sutures, avoidance of tension on the fascia, and accurate approximation of layers are features positively essential to the desired firm fascial union. Provided infection and postoperative pulmonary complications do not arise, and there is no constitutional state that interferes with healing, the result will be a solid wound and a permanent cure. Not being detached or unduly traumatized, these fascial sutures are surely living and have the advantage of being bathed in normal lymph at all times, even during the operation. Since this method avoids the operation on the thigh, time is thus conserved and the chance of wound infection is minimized. Fascial weaving does not cause muscle necrosis, since no tension or constriction is exerted.

Muscle-Fascia Suture with Preserved Material.—Rosenblatt and Meyers recommend the preserved ox fascia in muscle-fascia suture in cases of hernia. Preserved ox tendon was not satisfactory in result or in the handling. It appeared that the fascia graft acted as an element for substitution of connective tissue and was in part absorbed. There was some foreign body reaction. The authors have used this suture material as a single suture, tied by an instrumental method. They do not recommend the use of this fascia suture except in cases of involved or difficult hernias, as they feel that ordinarily its employment is not necessary.

Operation for Ankylosis of Hip Joint.—Roberts' procedure is based on the slot and key principle adopted by mechanical engineers in attaching a wheel or gear to a revolving shaft, which, theoretically at least, would produce results with less effort on the part of the surgeon and with considerably less expense to the patient. A tapered block about an inch square on its superior aspect is cut out from the posterior surface of the acetabulum, and is put aside in salt solution. The lower extremity is then placed in the desired position of 15 degrees abduction without rotation of the foot. The tapered opening in the acetabular rim is extended downward into the head of the femur, care being exercised to maintain the slope of the sides of the cut. The block of bone removed from the acetabulum is denuded of its articular cartilage and driven with force into the bed prepared for it, thus mechanically blocking any movement of the femoral head and bringing the lateral and inferior surfaces of the graft into intimate contact with the raw surfaces formed on the acetabulum and the head of the femur.

Results of Kondoleon Operation in Porto Rico.—An experience with twelve cases leads Burke to conclude that results in Porto Rico from the Kondoleon operation for the cure of elephantiasis have been discouraging.

Acute Ulcer Perforations Following Barium Meal.—Five cases are reported by Eckman in which acute ulcer perforations occurred following gastro-intestinal examination. He recommends that patients with ulcer in whom the symptoms point toward a penetrating type of lesion should be put on their guard and urged to remain within convenient distance for prompt and adequate medical consultation until the danger of perforation is passed.

Spontaneous Hematoma of Abdominal Wall.—Halperin reports the case of a woman, aged 71, well nourished, and in good general health, except for an occasional attack of epigastric distress and tenderness diagnosed as gallstone disease. One morning, while turning from one side to the other in bed, she felt a stabbing pain in the right portion of the abdomen. It was more severe and sudden than previous stomach attacks, and was soon followed by nausea, vomiting, sweating and partial collapse. Physical examination revealed a tender, hard mass extending from the gallbladder area slightly below the level of the umbilicus, 3 inches in diameter and with well demarcated edges. On careful consideration of all symptoms, immediate surgical intervention did not seem necessary. Two days later ecchymoses appeared in the skin about the umbilicus and the right abdominal wall. The tumor mass had increased in size, but its edges were not so easily outlined. Two tentative diagnoses were suggested: (1) ovarian cyst with a twisted pedicle, or (2) rupture of a blood vessel in the abdominal wall. The possibility of the former seemed to make a laparotomy imperative. The sheath of the rectus muscle was incised, and a large quantity of clotted blood was removed from the cavity within the sheath. The peritoneum was intact and was not opened. There was no active bleeding and no fresh blood. In the bed of the cavity containing the clotted blood was the distal portion of the deep epigastric artery dissected free from surrounding tissue for a distance of about 12 cm. Its anastomosis with the superior epigastric could not be demonstrated and had probably been destroyed. The artery was ligated and the free portion removed. The wound was closed without drainage. The patient made a good recovery.

U. S. Veterans' Bureau M. Bulletin, Washington, D. C.

4: 997-1102 (Dec.) 1928

Tuberculosis Problem in U. S. Veterans' Bureau. P. B. Matz.—p. 997.
Diagnosis of Arrested Tuberculosis. N. Barlow.—p. 1011.
Value of Intrahospital Staff Postgraduate Course of Study in Neuropsychiatry. J. H. Baird.—p. 1015.
Late Removal of Foreign Bodies. G. E. Pfeiffer.—p. 1019.
Appendicitis in Insane. D. L. Liberman.—p. 1023.
Prognosis in Pulmonary Tuberculosis. E. D. Pillsbury.—p. 1029.
Relationship of Altitude to Bronchial Asthma. J. T. Malone.—p. 1032.
Relation Between Pulmonary Tuberculosis and Several Physiologic and Pathologic Processes. E. S. Baker.—p. 1036.
Combined Surgical and Actinotherapy Treatment for Tuberculous Anal Fistula. R. W. Smith.—p. 1039.
Combination Cast Clasp. L. V. Swift.—p. 1043.

Progressive Gangrenous Ulceration of Abdominal Wall. F. N. Gordon.—p. 1045.
Myxedema. C. L. Magruder.—p. 1048.
Talk to Nurses. F. E. Leslie.—p. 1061.
Occupational Therapy in Treatment of Deteriorated Patients. P. G. Lasche and H. Rubin.—p. 1065.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 879-922 (Nov. 17) 1928

Urticaria: Pathogenesis and Etiology. R. Hallam.—p. 879.
*Biochemical Investigations in Allergic Conditions. H. W. Barber and G. H. Oriel.—p. 880.
*Hemoglobinuria and Urticaria Arising from Cold: Presence of Dermolysin. K. E. Harris, T. Lewis and J. M. Vaughan.—p. 885.
Radium Treatment of Intrinsic Carcinoma of Larynx. N. S. Finzi and D. Harmer.—p. 886.
Examination of Eyes and Eyesight of Young Children. T. Whittington.—p. 889.
*Kidneys in Pneumococcal Infections. A. V. Neale.—p. 891.
*Extreme Emphysema Involving Greater Part of Body. J. A. C. Macewen.—p. 892.
*Avulsion of Scalp. A. G. Banks.—p. 893.
Dextrocardia and Other Abnormalities. V. L. Ferguson.—p. 894.
Multiple Deformity in Adult Native: Case. C. R. Steel.—p. 894.
Spontaneous Pneumothorax Superimposed on Bilateral Artificial Pneumothorax. S. P. Wilson.—p. 895.
B. Coli Meningitis in New-Born Infant. F. Braid.—p. 895.

Biochemistry of Allergic Conditions. — Investigations into the metabolism of allergic conditions were made by Barber and Oriel. Certain phenomena have been demonstrated to occur with remarkable constancy in various manifestations of the allergic stage; some of these have already been described in experimental anaphylaxis and in serum sickness, which is generally admitted to be truly anaphylactic in origin. In the allergic state, whether it is intermittent, as in certain cases of urticaria, angioneurotic edema and asthma, or whether it is more or less chronic, with periodic exacerbations or remissions, as in Besnier's prurigo and infantile eczema, there can be recognized a definite cycle of events corresponding to the preparoxysmal stage, the actual paroxysm, and the postparoxysmal stage. In this cycle the most striking features are: (*a*) the rise in the amino-acid content of the blood; (*b*) the rise in the ammonia excretion out of all proportion to the excretion of acid in the urine; (*c*) the lowering of the corpuscle content of chloride, and the retention of chloride during the paroxysm with its subsequent excretion, as in pneumonia and other acute infections; (*d*) the deposition of urates in the preparoxysmal or paroxysmal stage; (*e*) the ether reaction during the periods of active manifestations, and (*f*) the diuresis with decreasing acidity and sometimes marked alkalinity of the urine in the postparoxysmal stage. The deposition of urates and the ether reaction in the urine indicate an alteration in its colloid state, comparable probably to the colloidal change that is held to occur in the blood during anaphylactic shock. It is probable that the increased ammonia excretion and the retention of chlorides are protective mechanisms.

Hemoglobinuria and Urticaria Arising from Cold. — Harris et al. report three cases. The first patient was suffering from paroxysmal hemoglobinuria and urticaria, the second from simple cold urticaria, and the third from uncomplicated paroxysmal hemoglobinuria, each representing a response to exposure to cold. The hemoglobinuria in the first and third types was due to a hemolysin, the urticaria of the second and third types to a dermolysin. These two substances are frequently associated. There is a general resemblance of the corresponding reactions, and the two substances are closely allied pathogenetically.

Kidneys in Pneumococcal Infections.—Analysis of the urine in 287 cases of acute lobar pneumonia in adults and study of the morbid anatomic conditions of the kidneys in forty-two fatal cases of acute lobar pneumonia lead Neale to conclude that on clinical grounds the pneumococcus would appear to be a benign organism in relation to the etiology of nephritis. Immediate and ultimate prognosis of renal injury in infections due to Fraenkel's organism would appear to warrant optimism. That profound toxemia occurs in many cases of pneumococcal disease is not doubted, but the views suggested by Neale are in accordance with a low renal susceptibility thereto. In acute lobar pneumonia nephritis is uncommon, but mild recoverable degenerative changes in the renal parenchyma are not uncommon. Nephritis occurring in lobar pneumonia is of a mild type and of short duration, and apparently recovery is the rule. Similar conditions occur in other pneumococcal infections. The benign features of renal involvement in pneumococcal infection are similar in children and adults.

Generalized Emphysema. — Macewen reports two cases. A miner, aged 44, was crushed by a fall of stone in the pit, and complained of great pain on the right side of the chest on admission, and inability to move the right arm, probably because of fracture of the right clavicle, with injury to the brachial plexus. Emphysema had already appeared over the right chest, and on the application of strapping the emphysema spread rapidly over the right neck and face, the eye being completely closed. Soon the whole face, neck, chest and abdomen were involved, the tissues becoming greatly distended, and the skin tense and glossy. The patient was quite unrecognizable. The scrotum was ballooned up. In spite of incisions made to allow of escape of the air, the emphysema extended, and next day the arms, and the legs down to the ankles, had become involved. After some days the emphysema began to subside very gradually, so that, three weeks later, it was very markedly less, the face now being free, although the thighs were still affected. Although in this case fracture of the ribs was diagnosed clinically from the emphysema over them and the curious crepitant sound, no evidence thereof was found on roentgen examination, the fracture of the clavicle being the only definite roentgen observation. The second patient, a man, aged 47, a forester, fell from a tree, and was admitted in a collapsed condition, with an obvious fracture of the right humerus about the insertion of the deltoid, a dislocation of the same shoulder, which was entirely masked by the emphysema which had already occurred, extending from the fourth rib (which was fractured, together with the second and third ribs), to the angle of the jaw, and over the shoulder. Soon afterward the emphysema involved the whole body except the scalp, the skin being tense and glistening over a large area of the face, neck and chest. It extended to the feet, but was not marked below the knees. On squeezing the air out of the eyelids, and forcing them open, the conjunctiva was found to be affected. The emphysema gradually subsided but persisted over the chest and neck for about four weeks.

Avulsion of Scalp: Transplantation of Skin Flaps from Abdomen.—In Banks' case failure of a portion of the scalp wound to heal led him to transplant two large pedicled flaps from the abdomen to the back of the upper arm and from thence to the head, with entire success.

Lancet, London

2: 1115-1166 (Dec. 1) 1928

*Chronic Spasmodic Affections of Colon and Diseases Which They Simulate. J. A. Ryle.—p. 1115.
*Relation of Arthritis of Sacro-Iliac Joint to Sciatica: 100 Cases. W. Yeoman.—p. 1119.
*Treatment and Prophylaxis of Scarlet Fever with Specific Antitoxic Serum. J. C. B. Craig.—p. 1123.
Congenital Valvular Obstruction of Urethra. H. B. King and W. P. H. Sheldon.—p. 1126.
Gastric Secretion in Phthisis. C. O. S. B. Brooke.—p. 1128.
Shot in Vermiform Appendix. J. Fraser.—p. 1129.

Treatment of Spastic Colon.—In the treatment of "spastic colon" Ryle says: Under general hygienic measures the importance of mental and physical relaxation, of holidays, of moderate exercise, of warmth, and of a sensible mixed diet must be enumerated. Often the diet has been cut too low and fruit and vegetables have been too rigorously excluded. The bulky starchy foods, potatoes, beans and peas, which predispose to intestinal flatulence, are better avoided, but fruits of all kinds, excepting those with tough skins and seeds, and the softer green vegetables should be liberally prescribed, together with whole meal bread and farm produce as a natural treatment of the costive tendency. Tobacco may require restriction or even be forbidden for a long test period. Purgatives must be entirely forbidden, but lubricants may be given. Belladonna or hyoscyamus in full pharmacopeial doses helps to relax the spasm.

Bromides should be reserved for the anxious and "jumpy" patients, and withheld in the case of the more jaded and depressed. In cases of severe pain and in exacerbations of mucous colic, initial large warm enemas administered very slowly, both to give lavage and to overcome the spasm, and rectal injections of warm liquid petrolatum (4 or 5 ounces), to be retained overnight, are useful.

Arthritis of Sacro-Iliac Joint. — Yeoman asserts that arthritis of the sacro-iliac joint accounts for an appreciable proportion of cases of sciatica, there having been 36 per cent in his series of 100 cases analyzed. The symptoms are due to a periarthritis involving the anterior sacro-iliac ligament, the pyriformis muscle and the adjacent radicals of the sciatic nerve, chiefly the first and second sacral nerves. It is possible to diagnose this condition with a reasonable degree of certainty. The roentgen ray confirms the diagnosis in many cases by showing spur formation, indistinct outline or fusion of the sacro-iliac joint. Treatment should follow the course indicated in arthritis or periarthritis of other joints of the body. For the acute condition, intravenous injections of T. A. B. vaccine give the best chance of removal of symptoms in the shortest possible time. Strain of the sacro-iliac joint may be a predisposing factor in the condition, but it is not a common sole cause of sciatica in England.

Serum Treatment of Scarlet Fever. — Craig says that there is reason to believe that the treatment of septic scarlet fever by a combination of specific antitoxic serum and polyvalent antistreptococcal serum cuts short the course of disease and lessens the liability to the development of subsequent septic complications. Specific antitoxic serum, if given early and in large doses, is an extremely efficacious treatment for toxic scarlet fever. Intravenous administration is more advantageous than intramuscular, as it ensures a more rapid maximum action.

Medical J. Australia, Sydney

2: 577-610 (Nov. 10) 1928

History of Spectacles. E. T. Smith.—p. 578.
*Treatment of Inoperable Cancer by Injection of Colloidal Preparation of Various Metals—Bismuth, Lead, Copper. J. L. Jona.—p. 587.
Chinosol Treatment of "Simple" Ulcerative Colitis. B. Corkill.—p. 589.
Four Interesting Jaw Tumors. P. Pickerill.—p. 591.
Asteroid Hyalitis. J. F. Spring.—p. 594.

Treatment of Inoperable Cancer by Colloidal Preparations.—Jona has been experimenting with a new method of administering metals by combining them with the red corpuscles of the blood. The preparation used was a paste of red blood corpuscles with which the particular metal employed was combined. In some cases the patient's own corpuscles were used; in others ox or sheep corpuscles were used. The bismuth-lead preparation contained 4.8 per cent bismuth and 2.7 per cent lead, estimated as the elementary bismuth and lead respectively, while the copper-lead preparation contained 3.13 per cent lead and 0.6 per cent copper, also estimated as the elementary metal. The preparation was used suspended in the strength of 1 Gm. of "paste" to 4 cc. of physiologic solution of sodium chloride. The dosage was determined by preliminary experiments on dogs. With the bismuth-lead preparations the general dose was 16 cc., a dose of 20 cc. nearly proving fatal. Of the copper-lead preparation the dose was 12 cc., which experience showed to be a safe maximum. As a rule four injections were given. The dose was repeated once a week. Recently Jona has treated fourteen patients who were of the absolutely hopeless type and were going rapidly down hill. They had practically all been operated on and many of them had also had one or more treatments with roentgen rays (high voltage therapy) or radium or both, with only temporary or no improvement. A summary is appended. Nearly all manifested some temporary improvement after the injections. From the statistical point of view the condition of about one half of the patients was unsatisfactory, as they were practically moribund when given the first injections, but it was felt that if there was anything in the method it might be possible to do something for even these patients, and the demand of common humanity that something should be done was satisfied. Many of the patients complained of abdominal pains or neuritic pains in the limbs, apparently due to the lead or copper or both, and some also complained of pains in the joints, which may have been "toxic" as a result of the absorption of breaking down tissue. In the later cases these conditions were anticipated by giving acetylsalicylic acid during the period of the course of injections, and the patients so treated have complained very little of pains in the joints or of neuritic pains.

2: 611-638 (Nov. 17) 1928

*Use of Morphine in Eclampsia. A. M. Davidson.—p. 612.
Endometrioma. J. L. T. Isbister.—p. 614.
Ectopic Gestation: Fifty Cases. J. B. Dawson.—p. 616.
Corneal Ulcer: Severe Types. J. C. Douglas.—p. 619.
*Microscope Slide Precipitation Test for Syphilis. T. Hamilton.—p. 621.
*Some Forms of Strangulated Hernia. E. M. Fisher.—p. 623.
*Vinca (Periwinkle) Treatment of Diabetes. L. J. J. Nye and M. E. Fitzgerald.—p. 626.
*Two Prognostic Tests in Tuberculosis. H. G. Anderson.—p. 627.
Twin Ectopic Pregnancy. J. B. Dawson.—p. 628.

Use of Morphine in Eclampsia.—Davidson suggests that, provided lavage is carried out, there is no contraindication to the use of morphine in the convulsive stages of eclampsia on the ground of delay in elimination, because the function of the kidney is not interfered with and the delay in bowel function may be counteracted. Morphine is a valuable drug whose action on the central nervous system is of inestimable value in restraining the convulsions and in reducing muscular activity generally, in quieting the mind of the patient and removing anxiety, and in tending to prevent all the secondary effects of the seizures.

Value of Kline Test for Syphilis.—Hamilton regards the Kline test as a simple, speedy and reliable method of diagnosis in cases of suspected syphilis. Of its specificity there seems little doubt; and the fact that known syphilitic patients, whose condition has been diagnosed clinically and according to the Wassermann test after a course of treatment, continue to react to the Kline test seems to indicate that failure to react to the Kline test is a more delicate criterion of freedom from syphilis than failure to react to the Wassermann test. Among 246 cases, the Kline and Wassermann tests were in agreement in 238 cases, in relative agreement in two cases and in disagreement in six cases.

Strangulated Hernias.—Fisher reports three cases of large hernia, two cases of sliding hernia, two cases of Richter's hernia, a properitoneal hernia and a case of retrograde strangulation, or Maydl's hernia.

Vinca Treatment of Diabetes.—*Vinca* is a perennial plant which grows plentifully in the coastal districts of Queensland from Moreton Bay to Thursday Island. The species of the genus *Vinca* are commonly known as periwinkle. It belongs to the natural order *Apocynaceae*. The flowers are sometimes pink, *Vinca rosea*, and sometimes white, *Vinca alba*. It appears that this plant was first used as a remedy for diabetes in Africa and in Queensland; today a great number of persons are taking it daily in the belief that they are benefited by its use. Three alkaloids have been isolated from *Vinca rosea*. Nye and Fitzgerald have also prepared a tincture with which most of their experiments have been made. They have carried out tests on five patients, in all of whom the results of treatment were uniformly unsatisfactory. The vinca treatment had no appreciable effect on the fasting blood sugar nor did it diminish the rise of the curve after dextrose. The beneficial effect felt by the patients who are so confident of its results is possibly due to the fact that the preparation has a weak digitalis-like action in common with other members of the *Apocynaceae*.

Prognostic Tests for Tuberculosis.—Two prognostic tests for tuberculosis which appear to be a useful addition to the usual clinical and laboratory methods of investigation are described by Anderson. They are the tricresol test of Montank and the urochromogen test of Weisz. In twenty-four instances in which the two tests were performed in parallel, the results were quite consistent.

CORRECTION

Tuberculin Not Epinephrine.—In THE JOURNAL, Dec. 15, 1928, page 1928, was published an abstract of an article that appeared in the *Lancet*, Nov. 10, 1928, page 972, entitled "Treatment of Asthma in Children with Tuberculin," by T. M. Ling. In the second line of the abstract the word epinephrine was used. This should read "tuberculin."

Bulletins et Mém. de la Soc. des Chirurgiens de Paris

20: 709-764 (Nov. 2) 1928. Partial Index

*Hereditary Transmission of Pure Double Cubital Club-Hand. C. Buizard.—p. 711.
Dangers of Wounds Caused by Thorns. Uteau and J. Bouget.—p. 715.
Immunity in Ophthalmology. C. Berens.—p. 717.
Heteroplastic Thyroid Transplantation. A. Madureira and Dartigues.—p. 719.
*Dangers of Biopsy in Cancer of Body of Uterus. Victor-Pauchet.—p. 726.
Total Mammectomy and Free Autotransplantation of Nipple and Areola. Dartigues.—p. 739.
Treatment of Inferior Retrognathism. L. Dufourmentel and M. Darcissac.—p. 750.

Hereditary Transmission, Through Several Generations, of Pure Double Cubital Club-Hand.—At the twenty-eighth Surgical Congress, held in Paris in 1919, Buizard presented an exceptional case of pure double club-hand, transmitted hereditarily in both sexes, through four successive generations. This deformity is very rare; its hereditary transmission has been reported only four times in France and Great Britain. Club-hand is, as a rule, accompanied by other deformities and usually transmitted through only two successive generations. In the case described by the author, however, no other malformation was present and the hereditary transmission of the club-hand could be followed positively through four successive generations. The bones of the wrist were all present but they were badly deformed; the case therefore belongs to the second of the three varieties of congenital club-hand described by Bouvier. Roentgenograms of two members of this family showed the same lesions. In a detailed description of the case, illustrated by two roentgenograms, Buizard considers interesting modifications of the bones. Persons with hereditary pure double cubital club-hand have never shown signs of alcoholism or of syphilis. The Wassermann reaction has always been negative. These persons are normal otherwise and are able to use their hands effectively.

Dangers of Biopsy in Cancer of Body of Uterus: Perforation and Metastasis.—Victor-Pauchet emphasizes the dangers of biopsy in cancer of the body of the uterus. In most cases the removal of fragments of tissue from the body of the uterus produces perforations which heal spontaneously but which very frequently result in metastasis of the cancer. Examination of the cervix obviously does not disclose cancer of the body, and even biopsy of the body may be negative in cases in which cancer is nevertheless present. On the basis of the formula of Terrier, who recommended abdominal hysterectomy in cases of suspected cancer of the body in women who had passed the menopause, Victor-Pauchet usually removes the uterus when he suspects cancer in the body of it. In spite of the fact that occasionally the excised uterus has shown only metritis or small polyps, the author does not regret having removed it since he considers that it is better to rid a woman at that age of a suspicious uterus than it is to leave her with a uterus in which cancer may develop.

Paris Médical

2: 393-408 (Nov. 10) 1928

Mesodermic Spirochetosis. H. Jausion.—p. 393.
*Diathermic Treatment of Ulcerative Roentgen and Radium Dermatitis. H. Bordier.—p. 402.

Diathermy in Treatment of Ulcerative Roentgen and Radium Dermatitis.—Bordier considers only cases of ulcerative roentgen and radium dermatitis in patients treated with roentgen rays or radium, excluding physicians, roentgenologists, and persons who apply radium. Diathermy has proved to be the only remedy having the power of modifying atonic wounds which do not have a tendency to heal spontaneously. The use of ultraviolet rays in the treatment of the kinds of dermatitis mentioned seems absolutely contraindicated and even dangerous. This statement is based on the following fact: A patient, whose case is described in detail, had been treated, seventeen years before, with radium for a tumor of his left parotid gland on which an operation had been performed; after a too long exposure to the sun, causing a slight insolation, the region of his cheek which had been irradiated formerly developed an ulceration. In this case the ultraviolet rays of the sun must be considered to have been the cause of the radium dermatitis. The reason for the dangerous action of ultraviolet rays in cases of ulcerative roentgen and radium dermatitis is simple: by treating with ultraviolet rays, whose wavelength is very short, a lesion produced by roentgen rays or radium, whose wavelengths are still shorter, an actinodermatitis is added to the initial roentgen or radium dermatitis. The author reports two cases of ulcerative roentgen dermatitis and one case of ulcerative radium dermatitis; in all three cases the lesions disappeared after from two to three months of diathermic treatment.

Pediatria, Naples

36: 731-786 (July 15) 1928

*An Epidemic of "Fifth Disease" Observed in Perugia. A. Bocchini.—p. 731.
Time of Appearance of Antibodies in Whooping Cough. R. Pastore and G. Guagenti.—p. 745.
*Autovaccinotherapy in Pyelocystitis of Childhood. A. Lubrano and A. Nastasi.—p. 756.
Echinococcosis in Children. F. De Capua.—p. 766.

An Outbreak of Erythema Infectiosum in Perugia.—Bocchini admits that erythema infectiosum, or "fifth disease," is rare but declares that it is not as rare as is supposed, since it is often not recognized. During the period from January to April, 1928, the author saw a number of cases of the disease. The patients were mostly children. At first, the type of exanthem caused much perplexity as to the differential diagnosis; measles or rubella was suspected. After a few days, a diagnosis of erythema infectiosum, or fifth disease, was made. The disease begins suddenly with a more or less intense reddening of the face, which is very warm to the touch. On close examination, a maculopapular efflorescence is observed. Sometimes the exanthem takes on something of the appearance of erysipelas. It spreads to the limbs, the trunk and sometimes to the abdomen. After from two to three days, sometimes sooner, it begins to retrogress. Desquamation does not occur. The prodromal signs of measles are absent in erythema infectiosum. In rubella, the redness of the face may bear some resemblance to erythema infectiosum, but the redness is not as transient as in fifth disease, in which the exanthematous localizations are very characteristic. Rubella, furthermore, is often associated with other symptoms, such as enlargement of the lymph glands. Confusion with scarlet fever is not possible. Measles, rubella and scarlet fever do not establish immunity against fifth disease. The prognosis is good. All the patients observed recovered in from five to fifteen days. No special treatment is indicated.

Autogenous Vaccine Therapy in Pyelocystitis in Children.—Lubrano and Nastasi have found pyelocystitis a not uncommon disorder in children. It may be primary or secondary. The primary form is, however, comparatively rare. The secondary form is frequent, especially after infectious diseases. Some supposedly primary forms are in reality secondary, certain infective processes (influenza, sepsis, and the like) having passed unobserved. The colon bacillus is the most common infective agent. The staphylococcus, the streptococcus and Fränkel's diplococcus are common. Acute pyelocystitis yields readily to treatment with antiseptics; it may also heal spontaneously. But chronic and recurring pyelocystitis is sometimes very resistant to treatment. It is particularly in this type that the authors have found specific autovaccinotherapy useful. They report in detail their experiences in sixteen cases in children ranging from 2 to 10 years of age, mostly 5 or younger. Especially interesting are two cases in which pyelocystitis followed measles and cutaneous sepsis, respectively. A mixed vaccine (colon bacillus and staphylococcus) caused the rapid disappearance of both disorders.

Policlinico, Rome

35: 1391-1434 (July 23) 1928. Practical Section

*Phrenicectomy in Surgical Treatment of Pulmonary Tuberculosis. F. Speciale.—p. 1391.
Necessity of Systematic Radiologic Examination for Diagnostic Precision. E. Pazzi.—p. 1396.

Phrenicectomy in Pulmonary Tuberculosis. — For phrenico-exeresis either the vertical or the transverse incision may be employed. Too obvious scars may be prevented by proper skin sutures. The relation of the phrenic nerve to the prevertebral fascia varies with the thickness of the connective tissue surrounding the angionervous fasciculus. The essential

condition for obtaining the best therapeutic results is that the diaphragm shall be pushed up as far as possible. If the elevation is considerable, all the pulmonary lesions (even the higher lesions) may be much improved. The pulmonary lesions presented by Speciale's patients being in all cases of the extensive chronic fibrocaseous type, the therapeutic results were, on the whole, directly proportional to the degree of elevation of the diaphragm, except in the cases in which there was, as a sequel, controlateral extension of the specific lesions. He points out that, since his material was small, only provisional value is to be assigned to his conclusions.

35: 1435-1486 (July 30) 1928. Practical Section

*Peculiar Characteristics of Streptococcus Isolated in Case of Endocarditis Maligna Lenta. M. Sabatucci.—p. 1435.
New Eyelid Sign in Exophthalmic Goiter. G. Galata.—p. 1438.

Peculiar Characteristics of a Streptococcus Isolated in a Case of Endocarditis Maligna Lenta.—Sabatucci's streptococcus was atypical on account of its low vitality and because of the difficulty of cultivating it. These characteristics were notably accentuated when it was cultivated in the presence of a large amount of the blood from which it was derived. Under these circumstances, all the morphologic characteristics of profound degeneration appeared. The organism was certainly not a hemolytic streptococcus and probably not *Streptococcus viridans*. In preparing blood cultures, it is desirable to make several cultures, varying quantities of blood being mixed with the culture medium. Though the serum in vivo does not show much defense activity, in vitro it may exert a marked antibacterial action, lowering the vitality of the bacteria and increasing the difficulty of cultivating them, or modifying greatly their morphology. Before adjudging a blood culture to be negative when there is no macroscopic evidence of bacterial development, a thorough microscopic examination of a large amount of material should be made.

Riforma Medica, Naples

44: 1237-1269 (Sept. 24) 1928

Blood in Amebiasis. G. Izar.—p. 1237.
Enzyme Reaction and Duration of Complement in Diagnosis of Tuberculosis. G. F. Capuani.—p. 1240.
Case of Lupus of Nose Simulating Epithelioma with Tuberculous Caseation of Suprarenal Gland and Addison's Syndrome. P. Ciuffini.—p. 1244.
*Glycosialia and Glycosialorrhea. A. Ferrannini.—p. 1249.

Glycosialia and Glycosialorrhea.—In connection with a recent article by O. Da Rin and M. Weinberger on dextrose in the saliva of diabetic patients, Ferrannini recalls the fact that the first observation made in Italy on this phenomenon was that originating in the Clinica Medica in Camerino, in 1907, of which he was the director. The patient, a man, aged 70, had for several months previously presented the usual symptoms of diabetes mellitus, with asthenia, emaciation, polydipsia and polyphagia, but with only slight polyuria (2 liters, at the most, in twenty-four hours) and low specific gravity of the urine (from 1.011 to 1.012). The urine, however, though examined under the most diverse circumstances (widely different diets) and with many different reagents, had never shown the slightest trace of sugar. The symptom from which the patient suffered most was an excessive flow of saliva, which was eliminated constantly and amounted to several liters in twenty-four hours, and at night was so troublesome as to prevent the patient from sleeping. The amount of sugar found ranged from 1 to 2.5 Gm. per thousand (Wildd's polaristrobometric test). About two years later it was noted that glycosuria alternated with and replaced vicariously glycosialorrhea. Later researches by his assistant, Farroni, revealed that the glycolytic action of an extract from the salivary glands is so marked in vivo as to inhibit in the dog experimental glycosuria otherwise produced by the ingestion of phlorhizin and morphine, and, though to a somewhat less extent, glycosuria resulting from the administration of epinephrine. The glycolytic action in vitro is considerable on various sugars: dextrose (especially), levulose, lactose, but not saccharose. Another fact observed by Farroni concerned the influence of an increased external salivary secretion (sialorrhea) on the elimination of dextrose through the saliva in animals in which experimental glycosuria has been induced. Farroni found that in experimental glycosuria induced by epinephrine, morphine and phlorhizin, the sialorrhea provoked by pilocarpine does not result in the elimination of dextrose in the saliva, with the single exception of phlorhizinic glycosuria, in which, associated with the sialorrhea induced by pilocarpine, minimal traces of dextrose were found in the saliva.

Archivos Españoles de Pediatría, Madrid

12: 639-702 (Oct.) 1928

Mediterranean Dengue Fever Observed in Seville in Summer and Autumn of 1927. J. G. Meneses.—p. 639.
Laryngeal Intubation. M. Calderin.—p. 645.
*Ultraviolet Irradiation in Empyema After Operation. J. Bosch Marin.—p. 665.

Ultraviolet Irradiation in Children Pleurotomized for Empyema.—Two cases of purulent pleurisy in children, aged 6 and 8 years, are reported by Bosch Marin. In both cases a simple pleurotomy was performed, the drain being left in situ. Ultraviolet irradiation was given, beginning with a small dose which was gradually increased. After fifteen and twenty-one days, respectively, the suppuration ceased and the drain was withdrawn. The general condition of the patients improved rapidly.

Archivos de Medicina, Cirugía y Espec., Madrid

29: 607-634 (Dec. 1) 1928

Differential Diagnosis Between Schizophrenia and Manic Depressive Insanity. J. S. Banús.—p. 607.
*Vitamins and Calcium in Hemodystrophies. A. Barsottelli.—p. 624.

Vitamins and Calcium in Hemodystrophies.—Barsottelli made a study aiming, on the one hand, at determining the relation of vitamin biochemically to the hemodystrophic changes characteristic of hemophilia and hemorrhagic purpura, and, on the other hand, to test biologically the product itself. His investigations demonstrated the changes which occur in the blood plasma and which are shown by increased coagulability. While the calcium content increases, the potassium content decreases. The greater this decrease, the more remarkable is the increase of calcium, but the one does not counterbalance the other. In the osmotic balance of the plasma quantitative changes take place in some other components (magnesium and sodium). The vitamin substance tested has an effect both curative and prophylactic on beriberi, owing to the presence of vitamin B. It has also an antirachitic effect, which has been demonstrated by experiments on white rats.

Deutsche medizinische Wochenschrift, Leipzig

54: 1789-1828 (Oct. 26) 1928

Place of Medicine in University. T. Brugsch.—p. 1789.
Decrease of Intellectual Power in Old Age. M. Rubner.—p. 1793. C'tn.
*Psychic Treatment of Exophthalmic Goiter. E. Moos.—p. 1795.
*Leukanemic Blood Picture in Puerperium; Recovery. F. Brüggemann.—p. 1796.
Mechanism of Emptying Extrahepatic Bile Tract and Cholecystographic Picture. H. Bronner.—p. 1798.
*Thrombophlebitis Varicosa in Puerperium. E. Gross.—p. 1799.
Venereal Infection in Patient with Amputated Penis. F. W. Oelze.—p. 1801.
Therapeutic Action of Yeast. H. Lippert.—p. 1801.
Infectiousness and Serologic Reactions in Case of Latent Syphilis. Rengert.—p. 1803.
Reply. A. Cohn.—p. 1803.
Calmette's Inoculation Against Tuberculosis: Questionnaire.—p. 1803. C'cn.
Gastric Neuroses. W. Zweig.—p. 1805.
Bacteria on Fruit. F. Hoder.—p. 1806.
Prevention of Epidemics in Barracks. E. Seligmann and H. Alterthum.—p. 1808.

Psychic Treatment of Exophthalmic Goiter.—Psychic factors, either sudden shock or long continuing states of grief or discord, can originate exophthalmic goiter, and in such cases, Moos states, psychotherapy should be applied. He has used psychoanalysis successfully in many cases, and reports one case in detail. When Moos saw the patient, a girl, aged 18, the symptoms, objective and subjective, were pronounced; they had been noticeable for three months. They became rapidly worse, so that neither operation nor irradiation could be considered. Psychoanalytic treatment was begun, with hypnotic treatments to improve sleep and appetite. The cause of the exophthalmic goiter was discovered in the patient's fear that she was pregnant. When this fear was proved to her to be groundless, she improved rapidly and was discharged practically cured, the only remaining symptom being a slight enlargement of the thyroid.

He has found that whether or not the thyroid returns completely to normal size depends on the duration of the enlargement before the psychotherapeutic treatment is begun. The cure has been maintained for about two years in spite of adverse conditions in the home. The girl is earning her living successfully at hard work.

Leukanemic Blood Picture in Puerperium; Recovery.—The case of severe puerperal infection reported by Brüggemann was associated with high grade anemia and blood changes similar to those of myeloid leukemia: erythrocyte count, 910,000, leukocyte count 48,000, hemoglobin 25 per cent, color index 1.4, eosinophils 1 per cent, lymphocytes 10 per cent, myeloblasts 1 per cent, promyelocytes 1 per cent, numerous erythroblasts, some with butterfly-shaped nucleus, moderate anisocytosis, poikilocytosis, microcytes, polychromatophilia and few thrombocytes. Psychic disturbances were present. Koessler and Maurer's diet was instituted and strictly adhered to and improvement was rapid. Thirty-two days after delivery the erythrocytes numbered 3,200,000; the leukocytes, 8,000; the hemoglobin was 80 per cent; the color index, 1.25. There was moderate anisocytosis, and a large number of blood platelets; for the rest, the erythrocyte picture was normal.

Thrombophlebitis Varicosa in Puerperium.—Thrombophlebitis of the cutaneous veins of the lower extremities is usually limited and superficial. In the literature of the last few decades Gross found only four cases in which thrombophlebitis of these veins, of extragenital origin, led to fatal sepsis in the puerperium. He adds a case of his own. In the last (the seventh) pregnancy the patient, aged 42, had marked swelling of varicose veins of both legs with swelling of the legs. Thrombi could be felt. The birth was normal and internal examinations were not made. The first four days of the puerperium were normal. On the fifth day the temperature rose to 39 C., the pulse rate increased to 128 and slight chills occurred. The patient complained of severe pains in the right leg. A hard cord, red and painful on pressure, was present on the inner side of the right leg; it corresponded to the short saphenous vein. Two days later the left leg was similarly affected. The general condition now became very bad. It is to be noted, however, that the abdomen and uterus were not painful on pressure. Several abscesses formed over the inflamed veins, and swelling and redness appeared in the right inguinal fossa. On the eleventh day post partum, temperature and pulse sank to normal and gangrene of the vein and surrounding tissues set in. The temperature rose again to 40 C. (104 F.) and on the fifteenth day post partum, the ninth day after the appearance of the thrombophlebitis, the patient died. At necropsy there was found the anatomicopathologic picture of sepsis with local changes in the genital organs and in both venae saphenae parvae. The direct connection between the two processes was not evident. From the clinical course Gross feels inclined to assume that the primary infection was in the varices of the leg. Early ligation of the vein might have been beneficial; because of the absence of chills pointing to general infection, it was not performed.

Klinische Wochenschrift, Berlin

7: 2085-2132 (Oct. 28) 1928

Origin of Inflammatory Leukocytes. B. Fischer-Wasels.—p. 2085. C'cn.
Misleading Results of Gas Metabolism Determinations. J. Bauer.—p. 2090.
Meteorological Factors in Incidence of Acute Laryngeal Stenosis. De Rudder.—p. 2094.
Combined Use of Digitalis Preparations and Substances with Action of Camphor. E. Bürgi and T. Gordonoff.—p. 2098.
Adynamia and Blood Sugar. G. Rosenow.—p. 2099.
Blood Group Research. W. E. Hilgers, T. Wohlfeil and F. Knötzke.—p. 2101.
*Carotid Pressure Experiment and Blood Pressure Decrease. E. Koch and H. Simon.—p. 2104.
*Treatment of Gastric and Duodenal Ulcer. Roeck.—p. 2105.
*Hemolytic Rapid Reaction in Syphilis. H. Gross.—p. 2106.
*Hypoglycemia in Addison's Disease. W. Wadi.—p. 2107.
Age When Children First Need Education. G. Tugendreich.—p. 2109.
Excretion of Nitrogen in Stomach and Duodenum. G. Scherk.—p. 2110.
Reply. H. Steinitz.—p. 2111.
Involvement of Bones in Congenital Syphilis. S. Engel and Schmidt.—p. 2111.
Capacity of Erythrocytes to Take Up Levulose. G. Eisner and F. Lewy.—p. 2111.
Tetany and Secretion of Milk. H. Simchowitz.—p. 2112.
Rheumatic Diseases of Miners. Gorn.—p. 2113.
Epidemiology of Measles. M. Klotz.—p. 2116.

Carotid Pressure Experiment and Blood Pressure Decrease.—Koch and Simon investigated the apparent conflict in the results obtained by Hering and by Stöwsand. The former found that pressure over the carotid brought about a reflex lowering of blood pressure. The latter maintained that this decrease was apparent rather than real. Using Wiersma's plethysmography with the hand set in plaster of paris, and a sensitive piston recorder, Koch and Simon found a regular decrease in the volume of the hand as a result of pressure on the carotid, whether or not the hand was congested. The decrease in volume was a consequence of lowering of the blood pressure owing to vascular dilatation in other parts of the body. This change in the volume of the hand, they state, accounts for Stöwsand's observations. The reflex lowering of blood pressure is, in fact, real, not merely apparent. They disagree with Stöwsand's assumption that with lowered tonus of the vessel wall less external pressure is needed to compress the vessel; they maintain that the pressure needed is greater, since the vessel wall tonus works in harmony with external pressure in opposing internal pressure.

Treatment of Gastric and Duodenal Ulcer.—Dietetic and medical treatment do not, Roeck affirms, represent a satisfactory management of ulcer. The strict diet is too monotonous and contains too few vitamins to be tolerated for a long period. He describes a method of mechanical cleansing of the stomach, with which he has had good results. He uses an olive-tipped duodenal tube, as more agreeable to the patient than the stomach tube, and sprays the stomach with luke-warm water under high pressure, withdrawing the water and loosened mucus as he proceeds. The openings in the olive tip should be at the sides, not at the end. He controls the position of the tip by fluoroscopy.

Hemolytic Rapid Reaction in Syphilis.—Results with Kadisch's hemolytic rapid reaction and with the Wassermann reaction were compared by Gross in 500 serums. They agreed in all except thirty-four. In twenty of these the Kadisch reaction was negative while the Wassermann reaction was positive. These serums were all from patients with latent or treated syphilis. In fourteen serums the Wassermann reaction was negative and the Kadisch reaction positive. In three of the cases represented in this group, grounds for suspecting syphilis were absent, two were of primary syphilis and the remaining nine were of latent or treated syphilis.

Hypoglycemia in Addison's Disease.—In a typical case of Addison's disease with destruction in the entire suprarenal system, a pronounced hypoglycemia accompanied the severe comatose attacks. The latter could be aborted by prompt administration of dextrose, from which fact Wadi concludes that the comatose attacks were hypoglycemic reactions. The entire carbohydrate metabolism was apparently disturbed. Sensitiveness to epinephrine was greatly decreased; 0.2 Gm. of epinephrine (ten times the usual dose) raised the blood pressure only 15 mm. of mercury in two minutes. It lowered the blood sugar. It appears that in Addison's disease the oxidation of sugar is accelerated, also that there is an impoverishment as regards glycogen. The phenomena known as cortical symptoms also agree in many points with the hypoglycemic reactions.

Medizinische Klinik, Berlin

24: 1693-1728 (Nov. 2) 1928. Partial Index

*Chronic Nutritional Disturbances in Infancy. F. von Torday.—p. 1693.
Action of Liver Diet in Pernicious Anemia. H. Aron.—p. 1696.
Intranasal Operation on Lacrimal Cells in Infants. M. Halle.—p. 1699.
*Blood Groups and Course of Therapeutic Malaria. G. Herrmann and H. Hlisnikowski.—p. 1700.
Cysts of Bladder. J. V. Mandel.—p. 1702.
"Work Reaction" of Blood Pressure and Its Connection with Angina Pectoris. H. May.—p. 1704.
Dietetic Experience with Food Preparations. A. M. Vith.—p. 1706.
Genesis of Myopia. Levinsohn.—p. 1707.
Treatment and Prevention of Rickets with Irradiated Ergosterol. P. Freud.—p. 1709.
Action of Various Expectorants. A. Wald.—p. 1710.

Chronic Nutritional Disturbances in Infancy.—Breast milk in itself, von Torday declares, is incapable of causing chronic nutritional disturbances. If such disturbances occur in the breast-fed infant, it is because the child is receiving too little milk or because, on account of a peculiarity of his constitution, breast milk alone has ceased to supply his needs.

Artificial feeding always has its dangers for the infant in the first few months of life. In order to provide the emaciated infant with a sufficient amount of nutriment, food has to be given in concentrated form. The food must, however, be chosen carefully to suit the individual child, or sooner or later the concentrated food will itself produce nutritional disturbances. In determining the amount of food required by an infant, physiologic, pathologic and constitutional factors must be taken into consideration, as well as the child's size. In the emaciated infant, growth, particularly of the skeleton, goes on and is at the expense of the fatty tissue, the muscles and the endocrine glands. Changes in the composition of the infant organism take place, which may be irreparable. Much hangs on the reaction to the nutritional disorder, and this is a matter of constitution. In treating these conditions, all the anamnestic data available must be obtained and carefully considered, else the dietotherapy instituted may lead in the wrong direction. Diarrhea may be safely combated by withdrawal of food for a brief period, but insufficient feeding for a period of days or weeks is distinctly harmful.

Blood Groups and Course of Therapeutic Malaria.—Herrmann and Hlisnikowski's investigations showed that the malaria ran a more virulent course (which is usually what is desired in therapeutic malaria) when the infection came from a person of the same blood group as the patient inoculated. They suggest that this fact may hold for certain other infectious diseases and that it may help to explain the rise and fall of infectiousness in certain epidemics.

Münchener medizinische Wochenschrift, Munich

75: 1869-1908 (Nov. 2) 1928

*Sudden Death from Ventricular Fibrillation. W. Stepp and G. W. Parade.—p. 1869.
*Treatment of Gastrocardiac Symptom Complex. L. Roemheld.—p. 1872.
Method of Determining Exact Depth of Foreign Bodies and of Organs and Tumors Roentgenologically. W. Knothe.—p. 1876.
Cerebrospinal Cell Picture: Technic. E. Forster.—p. 1877.
Local and General Reactions of Organism to Oral Foci of Infection. R. Weber.—p. 1878.
Adsorption of Vapors of Mercury and Mercuric Chloride to Activated Wood Charcoal. M. A. Rakusin.—p. 1881.
Prophylaxis of Rickets with Irradiated Ergosterol. J. Aengenendt.—p. 1882.
Chemical Reaction to Vitamins and Hormones. E. Christensen.—p. 1883.
*Clinical Diagnosis of Amyloidosis by Injection of Congo Red. M. Nathan.—p. 1883.
Oral Treatment with Extract of Blood Vessel Walls. A. Priesack.—p. 1884.
Muscular Pain in Knee. A. Müller.—p. 1887.
New Blood Sugar Colorimeter. E. Kaufmann.—p. 1888.

Sudden Death from Ventricular Fibrillation.—Without opening the thorax, Stepp and Parade injected air or particles of animal charcoal suspended in physiologic solution of sodium chloride through a long needle directly into the ventricle of the heart in dogs. The animals were then examined with the electrocardiograph. A multiplicity of disturbances of rhythm occurred, which in nearly all cases led to lasting ventricular fibrillation. Auricular fibrillation was not seen. The usual time of the appearance of the ventricular fibrillation was from two to three minutes after the injection. Necropsy on these animals showed in every case the presence of air bubbles or charcoal particles in large quantities in the coronary arteries. The emboli were also found scattered widely through the entire arterial system, including the arteries of the brain. The same phenomena followed injection of air after division of the vagus and, as far as possible, of the sympathetic, on both sides. These results lead to the assumption that ventricular fibrillation is caused by disturbances of the blood supply to the myocardium or to the system of conduction of stimulation. The experiment with exclusion of nervous connection between the brain and the heart showed that the fibrillation was not of reflex origin. Injections of milk and of oil occasioned marked disturbances of rhythm, but not ventricular fibrillation. Globules of milk or of oil were never found in the coronary arteries. The disturbances of rhythm that preceded the ventricular fibrillation in the animal experiments find a certain parallel in the preliminary stages of ventricular fibrillation in man, which cover a much longer period of time than is seen under the experimental conditions. With the electrocardiograph it is possible to detect the existence and to follow the progress of those changes in the myocardium that predispose to ventricular fibrillation. Such a predisposition is suggested by the negative T-deflection in leads 1 and 2 or in both, by the appearance of extrasystoles of various origins and by signs of arborization block or of the finer deformations in the Q-T-S group. In such cases much may be done in the way of prevention by advice or by medical treatment (quinidine) cautiously carried out.

Treatment of Gastrocardiac Symptom Complex.—In every case with heart symptoms, one should, Roemheld avers, remember the possibility of a connection with the stomach and intestine. There are three possible causes for the collection of air under the left half of the diaphragm, which is responsible for the gastrocardiac symptom complex: (1) aerophagy, (2) delayed emptying of the stomach and defective absorption of gases in the stomach or intestine, chiefly caused by increased vagal tonus or by anatomic changes, (3) increase in the products of fermentation and of decomposition in the gastro-intestinal tract. In patients with an organically healthy heart, treatment must be directed to the psyche and the general condition of the patient, to the digestive apparatus and to the diaphragm. Two errors that are likely to be made are to treat these patients for nervousness alone or for arteriosclerosis. Diaphragmatic breathing should be encouraged and measures to combat venous stasis in the abdomen (massage, gymnastics, sitz-baths, and the wearing of an abdominal binder at night) are useful. If organic heart disease is present, the same therapeutic principles should be followed in addition to treatment of the heart, but if no organic change is found in the heart, that organ should be ignored in the scheme of treatment, as otherwise an organic fixation of the symptom complex may take place, with resultant premature development of arteriosclerosis.

Clinical Diagnosis of Amyloidosis by Injections of Congo Red.—Nathan proceeds as follows: On the day before the injection he prepares the solution by dissolving pure congo red in sterile, freshly distilled water. The solution is boiled for ten minutes, filtered under sterile conditions and put in sterile ampules, which must be transparent so that the possible presence of any solid particles can be detected. Immediately before the injection the patient urinates. From 3 to 4 cc. of blood is withdrawn from an elbow vein into a centrifuge glass and the same quantity of congo red solution is injected slowly. The patient drinks a cup of tea to increase diuresis. After one hour a sample of blood is withdrawn from another vein into a centrifuge glass. Immediately thereafter the patient urinates again. By the next day the blood is coagulated and the blood clot has retracted, so that one can see whether the serum is reddened or not. If the serum of the second sample of blood contains congo red, it will have a distinctly red color in comparison with the serum of the first sample withdrawn. A little of the serum may be tested by the addition of a drop of hydrochloric acid in order to assure oneself that the red color is not due to hemoglobin. If hemoglobin is present, a brown color will appear; if congo red is present, the addition of hydrochloric acid gives a blue color. The presence of congo red in the serum of the second sample of blood signifies that amyloidosis is not present. The principle of the test is that the congo red in the circulating blood is fixed by amyloid tissue. Nathan used this test in thirteen cases. In nine patients without clinical symptoms of amyloidosis, the reaction was negative; i. e., injected congo red reappeared in the serum. In three patients with clinical amyloidosis, confirmed at necropsy in one case, the reaction was positive. In one patient who was possibly in the initial stage of amyloidosis, the reaction was negative. The urine was examined in the same manner, but in no case did he find congo red in the urine.

Zeitschrift für Krebsforschung, Berlin

27: 417-494 (Sept. 22) 1928

Blastoma-Like Systemic Disease of Rabbits Following Applications of Tar. M. Brandt.—p. 417.
Nitrogen Metabolism Following Tumor Implantation. I. P. Mischtschenko and M. M. Fomenko.—p. 427.
Increase in Lung Tumors Owing to Additional Irritants in Air. E. Schönherr.—p. 436.
*Metastasis of Cancer of Uterus into a Hypernephroma of Kidney. A. Walter.—p. 451.
First Observation of Malignant Sarcoma in an Amphibian. M. Volterra.—p. 457.

Significance of "Agens" in Rous's Sarcoma. E. Fränkel.—p. 467.
Idem. E. Fränkel, E. Mislowitzer and R. Simke.—p. 477.
Atypical Proliferation of Skin Epithelium During Aseptic Inflammation Caused by Cholesterol and Animal Charcoal. W. Garschin.—p. 481.
*Influence of Food on Tumor Growth. E. Friedberger and F. Heim.—p. 490.

Metastasis of Cancer of Uterus Into a Hypernephroma.—Cases of metastasis of carcinomas into tumors of a different nature are so rare that the occurrence of this kind of metastasis is still a question. Walter was unable to ascertain definitely by what route the cancer emboli in his case passed from the uterus to the hypernephroma in the left kidney. He believes, however, that they must have been carried there by the blood stream.

Influence of Food on Tumor Growth.—According to Friedberger and Heim, tumor growth and frequency are dependent on nutrition. For his experiments he used twenty-eight rats, half of which he fed with a mixture of oats and milk (oat-milk rats) and half of which he fed with a mixture of oats and olive oil (oat-oil rats). Although rich in calories the latter mixture has little nutritive value on account of its indigestibility. After being under observation for twelve days each rat was inoculated intraperitoneally with the same amount of a culture of sarcoma. All the animals fed with oats and milk gained weight, while all the animals fed with oats and oil lost weight. As soon as one of the animals died spontaneously (in almost every case it was one of the oat-oil rats) an animal of the other group was killed and both cadavers were weighed and dissected. The tumors, including all metastatic formations, were enucleated and also weighed. In spite of the sarcoma, all oat-milk rats gained weight from 16.8 per cent to 50 per cent. All oat-oil rats lost weight from 15.5 per cent to 46.8 per cent. The average weight of the tumor in the oat-oil rats was 3.2 Gm.; in the oat-milk rats it was 17.3 Gm.; i. e., 5.4 times as much. Not only did the tumors differ in weight but their anatomic pictures also differed. The tumors of the oat-milk rats were hard; they presented hardly any signs of degeneration and almost all of them had metastasized. The tumors of the oat-oil rats were mostly soft and degenerated; in only one of these rats were small mestastases found. These experiments indicate the necessity for a clinical study of the optimum tumor diet in man.

Klinichesky J. Saratov. Universiteta, Saratof

5: 527-606 (May) 1928

Blood Transfusion as Therapeutic Measure in Pediatrics. O. I. Beloussova.—p. 527.
*Ether Injection Into Abdominal Cavity. E. N. Dashkovskaya.—p. 537.
*Influence of Barometric Pressure, Temperature and Air Humidity on Erysipelas. S. A. Nekrassov.—p. 543.
Malarial Treatment of Progressive Paralysis. A. N. Dobrotin.—p. 551.
*Case of Cure of Epidemic Cerebrospinal Meningitis with Korsakoff's Symptom Complex. D. N. Aronov.—p. 561.
Interscapulothoracic Amputation. N. N. Nasarov.—p. 569.
*Forming of Vagina from Rectum. P. V. Zaitzeva.—p. 573.
Biologic and Chemical Diagnosis of Cancer. P. J. Shwarz-Grudsinskaya.—p. 577.

Ether Injection into Abdominal Cavity.—Dashkovskaya says that ether injections have been used in his clinic as a prophylactic measure in twenty cases, mostly laparotomies during which a pus sac was accidentally opened. In one case of peritonitis the ether was injected as a therapeutic measure. Ten patients developed a rise of temperature. A comparison with cases in which the ether was omitted showed that the prognosis was more favorable when the ether was used.

Influence of Barometric Pressure, Temperature and Air Humidity on Erysipelas.—Data collected over a period of five years form the basis of Nekrassov's observations on the relation of meteorological changes to erysipelas. He found that the frequency of the disease corresponds with increase of humidity in the air.

Recovery in Case of Epidemic Cerebrospinal Meningitis with Korsakoff's Symptom Complex.—Aronov describes an unusual case of cerebrospinal menigitis combined with Korsakoff's symptom complex, in which recovery took place. The patient was a man, aged 40. The treatment was by intravenous injection of 40 per cent methenamine solution, from 2 to 5 cc. daily; multivalent meningococcus vaccine was introduced twice, from 18 to 20 cc. each time.

Forming of Vagina from Rectum.—Vaginal aplasia, a rudimentary uterus and tubes, aplasia of the left kidney and dystopia of the right were found in a woman, aged 20. A vagina was successfully constructed from the rectum.

Omsky Meditsinsky Jurnal, Omsk

3: No. 2, 1928

Blood Sugar in Normal and Pathologic States. V. A. Leibovitch-Livshina.—p. 3.
Distribution of Blood Groups Among Cossacks. I. B. Majbitch et al.—p. 8.
Methods of Counting Blood Cells. S. A. Dorohov.—p. 14.
Cholecystitis Caused by Lambliosis. S. A. Anisimov.—p. 19.
Proctopexy (Heald's) in Children. S. M. Eiber.—p. 24.
*Intravaginal Mud Therapy in Gynecology. V. V. Tretiakov.—p. 26.
Traumatic Neurosis, Not "Delirium Febrile Gorky." E. N. Ivanov.—p. 36.
Blood-Brain Barrier. I. M. Perelman.—p. 48.
Primary Temporary Immobilizing Bandage, Combined with Simple Method for Extension of Lower Extremities in Fractures. E. A. Matushkin.—p. 93.
Copper Cartridge Shell in Cranial Cavity. A. G. Maslov.—p. 95.
Simplified Thermostat. A. I. Zakonov.—p. 97.

Intravaginal Mud Therapy in Gynecology.—Tretiakov reports twenty cases of endometritis in which mud therapy was used. The mud was introduced into the portio vaginalis and left in situ for twenty minutes. The duration of each treatment was increased so that in the sixth séance the mud was left in for two hours. The temperature of the mud was also gradually increased. Patients with chronic and subchronic conditions were considered favorable subjects for the treatment. In addition to endometritis, fifteen patients had inflammatory processes in the adnexa; eight had retroversion; four, endocervicitis; three, erosion of the vagina; three, perimetritis or parametritis, and one patient had an ovarian tumor.

Nederlandsch Tijdschrift v. Geneeskunde, Haarlem

72: 4891-5038 (Oct. 6) 1928

*Genuine Nephrosis. A. A. Hijmans van den Bergh.—p. 4892.
*Relative Hypoglycemia. J. Lankhout.—p. 4902.
Undulant Fever in Man Caused by Bacterium Abortus of Bang. J. van der Hoeden.—p. 4907.
Micromethod for Determination of Coagulation Speed of Blood. G. C. van Walsem.—p. 4944.
Recurring Amebic Dysentery with Mechanical Cause. G. E. H. Verspyck Mijnssen.—p. 4945.
Prolapse of Fetal Intestines as Birth Complication. H. J. Stomps.—p. 4947.

Genuine Nephrosis.—The modern conception of genuine nephrosis is that its origin is to be sought in a metabolic disturbance, leading primarily to albuminuria, and that the changes in the kidney are secondary. The edemas also are considered to be extrarenal in origin. In the case reported by van den Bergh, bodies with double refraction were not found in the urinary sediment. The blood cholesterol was greatly increased. The blood protein was below normal, with an increase of globulin in relation to albumin. The determination of the basal metabolism in nephrosis is difficult, because, on account of the edemas, the actual body weight is not known. In his patient the percentage was found to be normal at a time when the edema was slight. Aldrich and McClure's test indicated a greatly increased affinity of the tissues for water. In treatment, a strictly salt-free diet should be given at first, with limitation of the fluid intake to between 0.5 and 1 liter. If the edemas disappear or if they do not respond to the salt-free diet or increase when small quantities of salt are given, from 3 to 5 Gm. of salt a day may be allowed. A diet rich in protein has been advised for this disease, but he does not believe in pushing the protein intake too high. Till more experience has been obtained, he advises a normal protein ration, at most 125 Gm. for an adult. If it is certain that there is no retention of urea in the blood, urea, from 40 to 80 Gm. daily, is the best diuretic. Mercurial preparations are contraindicated and remedies of the purine group do not help.

Relative Hypoglycemia.—Lankhout reports the case of a man with diabetes of twenty-two years' standing, who developed carbuncles. He had previously refused insulin treatment, but his condition now necessitated its administration in large doses. The fasting blood sugar was brought down from 0.400 to 0.216 Gm. per hundred cubic centimeters of blood, but at

this point symptoms of hypoglycemia were so severe that the dose had to be reduced one half. The patient died. Lankhout suggests that injury to the liver from previous infectious diseases had something to do with the peculiarity in this case.

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Endometrial Proliferations. K. de Snoo.—p. 5286.
Diphtheria in General Practice. H. Aldershoff.—p. 5297.
*Treatment of Tumors in Pregnancy. F. C. van Tongeren.—p. 5308.
*Analysis of Normal Temperature Curves. E. Brouwer.—p. 5319.
*Nature and Origin of Epilepsy. J. J. H. M. Klessens.—p. 5343.
Atypical Cases of Suppuration of Frontal Sinus. E. W. de Flines.—p. 5348.

Treatment of Tumors in Pregnancy.—On the basis of thirty-two cases, reported separately, van Tongeren advises conservative treatment of uterine myoma complicating pregnancy. If operation becomes necessary before term, enucleation should be attempted. One of his two cases thus treated ended badly; in the other the course of the pregnancy was undisturbed and the birth was normal. If the tumor causes an obstruction during the birth process, cesarean section is in most cases safer for the child than enucleation of the myoma with reposition of the uterus. In the puerperium of a woman with myoma it is especially important to combat retention of the lochia, to avoid infection of the tumor. His material contained twenty-seven cases of tumor of the ovary, one a fibroma, the others cysts. In the thirteen cases in which the cyst was removed between the seventh week and the sixth month of pregnancy, there were five abortions. In eight cases the cysts were too small to cause immediate concern. In six further cases the women entered labor; cesarean section together with ovariotomy was done in three, in two delivery was spontaneous and in one by forceps. All these mothers and children came through well. Cysts larger than an apple must sooner or later be removed and van Tongeren thinks that the percentage of abortions following their removal is not sufficiently high to offset the greater danger to the mother of cesarean section at term. Therefore he holds that ovarian tumors larger than an apple should be extirpated in pregnancy; this should be done as soon as they are discovered, but in no case earlier than the seventh week. In inoperable as well as in operable malignant tumors he performs hysterectomy without waiting till the pregnancy is at term, with the difference that in the former cases the hysterectomy is supravaginal instead of total and that operation is always followed by irradiation. If the woman is seen first during labor, cesarean section should be done at once to avoid laceration of the carcinomatous tissue, and if spontaneous birth has already taken place no time should be lost before removing the uterus, provided the tumor is operable. Inoperable rectal carcinoma is an exception in that, in view of the bad prognosis in any case, it may be allowable to wait till the child is viable. Whether or not the pregnancy should be interrupted in operable rectal carcinoma is uncertain. He inclines to the opinion that it should be maintained if possible. Operation for the tumor should in either case be done at once.

Analysis of Normal Temperature Curves.—Brouwer has worked out a trigonometric series to represent the twenty-four hour temperature curve in the normal human being. The following hypothesis, he says, agrees with observed facts: The normal temperature curve is under the control of two sets of causes, one set known (the taking of food, intellectual and muscular work, waking and sleeping, etc.), the other unknown. The temperature variations caused by the latter are represented by 0.5 C., the maximum being reached at about 4 p. m.

Nature and Origin of Epilepsy.—Klessens points out that epilepsy may be seen in persons of superior intellectual endowment and superior heredity and in families in which other cases are unknown. Heredity has been overrated in the etiology, nor is the disease always congenital. Symptomatic epilepsy may be explained by local brain lesions, but in genuine epilepsy changes in the brain have been demonsfrated only in old cases and in only a certain proportion of these. The changes are chiefly sclerotic lesions in the hippocampus major or in the cerebellum. These changes are found in other diseases besides epilepsy, particularly in diseases associated with spasm. Spielmeijer (1927) believes that these sclerotic processes have their origin in past spastic conditions in the blood vessels of the brain, which led to ischemia of the brain and, through partial death of the brain tissue, to sclerosis. It seems certain that the local changes in the brain have nothing to do with the cause of epilepsy, but one may suppose that the epileptic phenomena arise from deficient blood supply to the brain, caused by spasm of the cerebral vessels.

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89: 1061-1188 (Nov.) 1928

Chronic Epidemic Encephalitis, Particularly Its Late Symptoms. K. Mathisen.—p. 1061.
Comparison of Methods of Determination of Refraction. H. G. A. Gjessing.—p. 1087.
*Otogenic Meningitis. R. Moe.—p. 1098.
*Anemia in Early Childhood; Relation of Pseudoleukemia to Grave Anemia. E. Esp.—p. 1121.
Acidosis of Pregnancy. H. Sommerschild.—p. 1158.

Otogenic Meningitis.—Moe presents seventy-nine cases, fifty-eight in men and twenty-one in women, with recovery in seventeen cases, only two of these in women. Only nine cases were complicated with labyrinthitis. In the cases of acute otitis, the meningitis set in in the first week in eleven cases, in the second in one, in the third in nine, and in the fourth in fourteen. The prognosis seems most grave in the first decade of life. Treatment followed the usual lines. He says the procedure is now conservative in incision of the dura mater and in interventions on the labyrinth, done as a rule according to Ruttin. The only drug given is methenamine, intravenously in large single doses. He believes it may sometimes be useful and no permanent ill effects on the urinary system have followed. Streptococcus serum has not given results.

Anemia in Early Childhood; Relation of Pseudoleukemia to Grave Anemia.—Esp reports sixteen cases of grave anemia in the first years of life, with diagnosis of pseudoleukemic anemia in seven. Of the eight patients followed up, seven are well; two of these, examined after seven and two years, respectively, had had typical pseudoleukemic anemia. He concludes that pseudoleukemic anemia of childhood is not a distinct entity but a symptom complex due to various factors in a predisposed child. Prematurity is an important etiologic factor. Transition forms appear with one or more symptoms absent. Possibly a special injurious agent is necessary to produce in the main, highly characteristic blood and organic picture, which does not appear in most cases of deficient nutrition, disturbances of nutrition, rickets or infection, including syphilis. Apart from the specific anemias, treatment of anemia in early life is chiefly dietetic. When this treatment alone does not suffice, iron seems to act almost as a specific. In pseudoleukemic anemia of childhood, arsenic is given simultaneously with iron, the treatment being continued for a considerable length of time.

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90: 1071-1090 (Nov. 15) 1928

*Fractional Alcohol-Histamine Test Meals. T. Funding.—p. 1071.
*Proof of Hematuria. E. Boas.—p. 1074.
New Medical Thermometer. M. Philipsen.—p. 1075.
Treatment of Appendicitis. E. Himmelstrup.—p. 1078.

Fractional Alcohol-Histamine Test Meals.—After the alcohol-histamine test meal Funding found true achylia in fifteen out of twenty-five patients, all of whom showed achylia after two Ewald meals. The more or less marked acidity with positive Günzberg reaction in the remaining ten cases appeared in only seven of them after the injection of histamine. After the injection of histamine, increased acidity values were seen in seven of the nine patients with hypochylia, there was a noticeable rise of acidity values in ten patients with a normal amount of ferments, and one of the two patients with hyperchylia showed an acidity value higher than after the Ewald meal; the other, the same value after both test meals.

Proof of Hematuria.—Boas compared the benzidine reaction with the guaiac and phenolphthalein reactions and found it no less delicate than the phenolphthalein test, better than the guaiac test, and more reliable than either because of the constancy of the reagent. He says the test is best made with Gregersen's benzidine reagent or filter, through which the urine is filtered (the filter from Heller's test).